

TIJDSCHRIFT VOOR ENTOMOLOGIE

UITGEGEVEN DOOR

DE NEDERLANDSE ENTOMOLOGISCHE VERENIGING



INHOUD

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REVISION OF THE GENERA OF BRACONINI WITH FIRST AND SECOND METASOMAL TERGITES IMMOVABLY JOINED (HYMENOPTERA, BRACONIDAE, BRACONINAE)

by

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ABSTRACT

The genera of the Braconini with the 1st and 2nd tergites immovably joined are keyed and illustrated. Four new genera are described: *Apotosoma* (type-species: *A. latimarginale* sp. nov.), *Aspidobracon* (type-species: *A. pierrei* sp. nov.), *Hyboteles* (type-species: *H. toxopeusi* sp. nov.), and *Pedinopleura* (type-species: *P. emarginata* sp. nov.). In addition to the four new type-species, three new species are described: *Apotosoma melateles* sp. nov., *Aspidobracon hesperivorus* sp. nov., and *A. noyesi* sp. nov. A lectotype is designated for *Physaraia furcata* (Guérin-Ménéville, 1848). The genera are divided into two new subtribes: the Physaraiina (based on the genus *Physaraia* Shenefelt), and the Aspidobraconina (based on the genus *Aspidobracon* nov.)

INTRODUCTION

During my visit to the Paris Museum in 1979 I received a vial with specimens belonging to a genus unknown to me, reared by Mr. Jacques Pierre from *Acraea cepheus* (L.) (Lepidoptera, Nymphalidae, Acraeinae) on *Caloncoba welwitschii* Gilg. (Flacourtiaceae) and supposed to be infesting the egg-stage of the host. However, the vial contained no traces of eggs, only a chrysalis of the butterfly with a hole in it, and several cocoons of the parasites. Considering this, as well the size of the adult parasite (2.7–3 mm) and of the eggs of the host (1–1.5 mm by 0.5 mm), it is certainly not an egg-parasite. There remains the possibility that the eggs were infested, and that the embryo of the parasite remained dormant till the larva of the host was large enough for complete development of the parasite. However, this would indicate that it is an endoparasite, a feature unknown up to now in the Braconinae. For the moment it is most likely that the host reared from the egg-stage (Mr. Pierre, in litt.) was infested in the larval or pupal stage and that the gregarious parasite-larvae live as parasite in the host-chrysalis. The emergence from the pupa of the host is an exceptional feature in the Braconinae. All other genera of Braconinae are (as far known) ectoparasitic on holometabolous larvae. In this paper the genus *Aspidobracon* is described to include this species, together with other taxa in the Bra-

conini possessing the peculiar feature of the immovably joined 1st and 2nd tergites.

For the terminology used in this paper, see Van Achterberg, 1979: 242–249; the term “thyloid” (not mentioned in that paper) is used for the elongate sensillae on the antennal segments (figs. 2, 16, 136), and for the term “sub-ocular groove”, see fig. 72.

PHYLOGENY

The group of genera treated in this paper belongs to the tribe Braconini Stephens of the Braconinae, defined by the robust scapus, which is truncate apically and ventrally as long as dorsally or somewhat shorter (in lateral view) (figs. 12, 45, 111, 137) and by vein 1r-m of hind wing shorter than vein SC+R1 (figs. 3, 30, 114, 138). The genera of the Braconini with 1st and 2nd tergites immovably joined (figs. 1, 41, 135) share a strong and complete medio-longitudinal carina on the propodeum (figs. 117, 147, but absent (secondarily lost?) in *Physaraia*), and mesoscutum regularly and (rather) densely setose. These features are also present in the *Plesiobracon* group as defined by Van Achterberg (1983: 185). Especially the Afrotropical genus *Carinibracon* Van Achterberg, 1983, resembles the genera treated in this paper. It has the 6th tergite sculptured, and it shares the strong dorsal carinae of the 1st tergite with several genera. Different are the movably joined 1st and 2nd

tergites, the wide obtuse lobe of the tarsal claws, and the minute medio-basal area of the 2nd tergite. Both other genera of the *Plesiobracon* group differ by the smooth 6th tergite. The genus *Kenema* Van Achterberg, 1983, differs also by the robust 2nd submarginal cell of the fore wing (but shares with *Physaraia* the medial carina on the mesoscutum and the sculpture of the head and mesoscutum). The genus *Plesiobracon* Cameron, 1903, differs by the shape of the claws, of the 4th tergite, and by the sculpture of the metasoma.

The genera treated in this paper fall into two distinct groups: the *Physaraiina* (subtribus nov., containing only *Physaraia* Shenefelt, 1978) and the *Aspidobraconina* (subtribus nov., based on *Aspidobracon* gen. nov., and including six more

genera). The *Physaraiina* differ by six apomorphic character-states from the *Aspidobraconina*: i) the reduction of the metasomal sutures, ii) 3rd tergite forked posteriorly, iii) 4th-6th tergites completely retracted, iv) lateral margin of 2nd and 3rd tergites slanted inwards, v) clypeus with dorsal carina, vi) mesoscutum with medial carina more or less developed. Except for the immovably joined 1st and 2nd tergites, and the medial carina of the metanotum, scarcely any synapomorphic character-states united the *Physaraiina* with the *Aspidobraconina*; this makes it uncertain if they are sister-groups, as depicted in fig. 153. Because no other group is known to be more related, this arrangement is the most plausible for the moment, despite the lack of synapomorphies.

Table 1. Synoptic table of most important character-states of the genera treated in this paper.

Genus	<i>Plesiobracon</i> group	<i>Physaraia</i>	<i>Dioxobracon</i>	<i>Apotosoma</i>	<i>Pedinopleura</i>	<i>Hypoteles</i>	<i>Eutropobracon</i>	<i>Aspidobracon</i>	<i>Philomacroploea</i>	
● = apomorphous										○ = plesiomorphous
1st and 2nd tergite immovably joined	○	●	●	●	●	●	●	●	●	1st and 2nd tergite movably joined
metasomal sutures largely absent	○	●	○	○	○	○	○	○	○	metasomal sutures completely developed
3rd tergite forked	○	●	○	○	○	○	○	○	○	3rd tergite without fork
clypeus with dorsal carina	○	●	○	○	○	○	○	○	○	clypeus without dorsal carina
mesoscutum with complete carina	●	●	○	○	○	○	○	○	○	mesoscutum without longitudinal carina
lateral margin of 2nd and 3rd tergites slanted inwards	○	●	○	○	○	○	○	○	○	lateral margin of 2nd and 3rd tergites confluent with rest of tergites, directed ventrally
claws simple	○	○	○	○	●	●	○	●	●	claws with lobe or lamella
eyes with subocular groove	○	○	●	●	●	●	○	○	○	eyes without subocular groove
metanotum with longitudinal carina	●	●	●	●	●	●	●	●	●	metanotum without longitudinal carina
propodeum with longitudinal carina	●	○	●	●	●	●	●	●	●	propodeum without longitudinal carina
pleural sulcus smooth	●	●	●	●	●	●	○	○	○	pleural sulcus crenulate
mesosternal suture smooth	●	●	●	●	●	●	●	○	○	mesosternal groove smooth
6th tergite emarginate	○	retracted	●	○	●	○	○	○	●	6th tergite truncate
antescutal depression present	●	○	○	○	○	○	○	○	●	antescutal depression absent
lateral margin of 3rd tergite lamelliform	●	○	●	●	●	●	●	●	○	lateral margin of 3rd tergite thick
3rd tergite widened laterally	○	○	●	●	●	○	○	○	○	3rd tergite not widened laterally
ovipositor short	○	○	●	○	○	●	○	●	●	ovipositor comparatively long
metanotum protruding	○	○	●	○	●	○	○	●	○	metanotum blunt dorsally
3rd tergite with antero-lateral grooves	●	○	●	●	○	○	●	●	○	3rd tergite without antero-lateral grooves
dorsal carinae of 1st tergite absent	○	○	○	●	○	○	○	○	○	dorsal carinae of 1st tergite present

The Aspidobraconina consist of two subgroups (fig. 153); the group including *Pedinopleura* gen. nov. and three other genera has a subocular groove, the pleural sulcus and mesosternal suture smooth, and occurs in New Guinea (three genera), Australia (one genus), Malagasy (one genus) and Oriental Region (one genus). The other group (including *Aspidobracon* gen. nov. and two other genera) has these three characters in the plesiomorphous state (except *Eutropobracon*, which has a virtually smooth mesosternal suture) and is provisional because of the lack of synapomorphies. All three genera of this group occur in the Oriental Region, with additional species in the Afrotropical Region and Japan. For further details of the supposed phylogenetic relationships, see fig. 153; the majority of the characters used for the analysis are listed in table 1.

KEY TO THE GENERA OF BRACONINI WITH 1ST
AND 2ND METASOMAL TERGITES IMMOVABLY
UNITED

1. Carapace of 1st—3rd tergites without deep transverse sutures medially (fig. 1); 4th—6th tergites retracted (figs. 1, 6); 3rd tergite forked apically (fig. 6); clypeus with dorsal carina (fig. 8); mesoscutum with medial carina (fig. 11), but sometimes absent; (subtribe *Physaraia* nov.) *Physaraia* Shenefelt
- Carapace of 1st—3rd tergites with deep and complete transverse sutures (figs. 13, 66, 121); 4th—6th tergites exposed; 3rd tergite truncate apically (fig. 27); clypeus without dorsal carina (figs. 26, 33, 91); mesoscutum without medial carina (figs. 35, 46, 64); (subtribe *Aspidobraconina* nov.) 2
2. Eye with distinct subocular groove (figs. 21, 29, 72); pleural sulcus smooth (figs. 13, 29, 54, 68); posterior half of mesosternal suture smooth; tarsal claws with a (small) ventral lobe (figs. 22, 51) or simple (figs. 37, 62, 75) 3
- Eye without subocular groove (figs. 82, 97, 109, 135); pleural sulcus crenulate (figs. 82, 109, 122, 135); posterior half of mesosternal suture crenulate, exceptionally obsolete or smooth (e.g., *Eutropobracon*); tarsal claws simple (fig. 102, 142), exceptionally with lobe (fig. 90) 6
3. Metanotum without complete medio-longitudinal carina (fig. 78); 6th tergite strongly convex (fig. 68); lateral lamelliform margin of 3rd tergite narrow, similar to margin of 2nd tergite (figs. 68, 77); dorsal carinae of 1st tergite united (fig. 80); tarsal claws without lobe (fig. 75) .. *Hyboteles* gen. nov.
- Metanotum with complete lamelliform medio-longitudinal carina (fig. 35); 6th tergite at most moderately convex (fig. 29); lateral lamelliform margin of 3rd tergite widened, and wider than margin of 2nd tergite (figs. 13, 29, 41, 63, 151); dorsal carinae absent (figs. 66, 149), or if present then not united (figs. 27, 39, 53); tarsal claws with small acute lamella (figs. 22, 51) or virtually absent (figs. 37, 62) 4
4. Notauli present (figs. 20, 35, 46); dorsal carinae of 1st tergite present, and more or less lamelliform (figs. 27, 39, 53); frons without narrow V-shaped groove (figs. 32, 44); lateral margin of 2nd tergite not (fig. 13) or abruptly (fig. 29) widened posteriorly; medial carina of metanotum tooth-shaped protruding (figs. 13, 29, 41); base of 4th—6th tergites variable (figs. 13, 29, 41) 5
- Notauli absent (fig. 64); dorsal carinae of 1st tergite largely absent (figs. 66, 149); frons with narrow V-shaped groove near antennal sockets (figs. 65, 152); lateral margin of 2nd tergite gradually widened posteriorly (figs. 63, 151); medial carina of metanotum not protruding (fig. 54); 4th—6th tergites with deep transverse depressions basally (figs. 67, 151) *Apotosoma* gen. nov.
5. Fifth and 6th tergites deeply impressed basally (figs. 29, 41); 6th tergite (rather) shallowly emarginate medio-apically (figs. 40, 47); propleuron flattened and with small posterior flange (figs. 29, 41); occipital flange very wide, about as wide as mandible-base and distinctly removed from base of mandible (figs. 29, 33, 41, 52); middle lobe of mesoscutum with pair of grooves anteriorly (figs. 35, 46); mesopleuron densely sculptured (figs. 29, 41) *Pedinopleura* gen. nov.
- Fifth and 6th tergites less impressed basally (fig. 13); 6th tergite deeply incised medio-apically (fig. 28); propleuron comparatively convex and without distinct posterior flange (fig. 13); occipital flange narrow, much narrower than width of mandible-base and close to base of mandible (figs. 13, 26); middle lobe of mesoscutum without pair of grooves anteriorly (fig. 20); mesopleuron sparsely sculptured (fig. 13) *Dioxybracon* Granger

6. Third tergite without lamelliform lateral margin (fig. 97); 6th tergite semi-circularly emarginate medio-apically (fig. 108, but less in ♂); 2nd tergite with medial carina more or less developed (fig. 107); antescutal depression present (fig. 97); malar suture (rather) deep (fig. 97) *Philomacroploea* Cameron
- Third tergite with lamelliform lateral margin (figs. 82, 109, 122, 135); 6th tergite truncate (fig. 96) or protruding (figs. 121, 134, 144); 2nd tergite without medial carina (figs. 95, 121, 148); antescutal depression absent (figs. 82, 122) or present as narrow cleft (fig. 135); malar suture variable 7
7. Third to 5th tergites medially much shorter than laterally (fig. 95); 6th tergite truncate apically (fig. 96); ovipositor sheath somewhat longer than metasoma (fig. 86); tarsal claws with lobe (fig. 90); metanotum not protruding (fig. 81); vein cu-a of fore wing shortly postfurcal (fig. 85); dorso-lateral carinae of 1st tergite strong and lamelliform (fig. 82); angle between veins 1-SR and C+SC+R of fore wing about 55° (fig. 84); propodeal tubercle present (fig. 82) *Eutropobracon* Ramakrishna Ayyar
- Third to 5th tergites medially about as long as laterally (fig. 121); 6th tergite protruding medio-apically (figs. 121, 134, 144); ovipositor sheath shortly protruding beyond apex of metasoma (figs. 109, 122, 135); tarsal claws without lobe (figs. 113, 130, 142); metanotum somewhat protruding (figs. 109, 122, 135); vein cu-a of fore wing interstitial (figs. 114, 138); dorso-lateral carinae of 1st tergite absent (figs. 109, 122, 135); angle between veins 1-SR and C+SC+R of fore wing more than 70° (figs. 115, 127, 141); propodeal tubercle absent (fig. 109) *Aspidobracon* gen. nov.

PHYSARAIA subtribus nov.

Syn.: *Gastrothecini* Fahringer, 1928 (invalid, based on junior homonym).

Diagnosis. — Head in lateral view comparatively small (fig. 1), but in some species larger than in type-species; scapus truncate apically (fig. 12); clypeus with dorsal carina (fig. 8); pronotal sides anteriorly curved towards mesoscutum (fig. 1); mesoscutum densely setose and with medial carina (fig. 11), but sometimes absent; scutellar sulcus crenulate and comparati-

vely wide (fig. 11); vein cu-a of fore wing subinterstitial (fig. 3); vein 1r-m of hind wing short (fig. 3); fore tibia without pegs or spines; propodeum with pair of tubercles (fig. 1) and without medial carina; 1st—3rd metasomal tergites forming a strongly convex carapace, without deep transverse sutures medially and no antero-lateral grooves (figs. 1, 7); carapace with 3 pairs of spiracles, situated distinctly above ventral rim of carapace (fig. 1); ventral margin of 2nd and 3rd tergites slanted inwards and not lamelliform; 3rd tergite emarginate medio-apically and forked posteriorly (fig. 6); 4th—6th tergites completely retracted (fig. 1).

Contains only the genus *Physaraia* Shenefelt, 1978; the biology is unknown.

Physaraia Shenefelt, 1978

Shenefelt, 1978: 1714—1716.

Type-species: *Gastrotheca furcata* Guérin-Ménéville, 1848 (original designation). Gender: feminine. Syn.: *Gastrotheca* Guérin-Ménéville, 1848, nec Fitzinger, 1843.

Diagnosis. — Body finely rugose-coriaceous (figs. 1, 5—7, 11); eyes glabrous and slightly emarginate (fig. 8); antescutal depression absent; mesoscutum widely truncate anteriorly (fig. 11); propleuron rather flat (fig. 1); precoxal sulcus scarcely impressed (fig. 1); mesosternum without crenulate medial suture; pleural sulcus mainly smooth and shallow (fig. 1); metapleural flange large, lamelliform and obtuse (fig. 1); notauli shallowly impressed (fig. 11); metanotum with crest-shaped complete medial carina (fig. 11), and not protruding dorsally (fig. 1); antero-dorsal part of propodeum differentiated from posterior part, short, about as long as metanotum dorsally; propodeum in lateral view acute anteriorly (fig. 1); propodeal spiracle rather large and just behind middle of propodeum; angle between veins 1-SR and C+SC+R about 70° (fig. 3); tarsal claws with acute, robust submedial lobe, which is yellowish pectinate (fig. 9); whole 1st tergite strongly convex (fig. 7), its dorsal carinae meeting each other medially (fig. 7), and without dorso-lateral carinae (fig. 1); ovipositor protruding far beyond apex of metasoma, long (fig. 1); hypopygium of ♀ large and acute apically (fig. 1).

Rather small genus, most species known from the Afrotropical region, but the type-species has been reported from North Africa (Egypt, Libya), and one species has been described from

the Oriental Region (*P. sumatrana* Enderlein, 1905). There exists no reliable key to the species of *Physaraia*.

***Physaraia furcata* (Guérin-Méneville)**
(figs. 1—12)

Guérin-Méneville, 1848: 349—350; fig. 4; Shenefelt, 1978: 1715.

Redescribed after ♀ from Ethiopia (Ara) compared with the lectotype; length of body 7.7 mm (including spines), of fore wing 7.1 mm.

Head. — Antennal segments 47 (with many thyloids, fig. 2), length of 3rd segment 1.1 times 4th segment, length of 3rd, 4th, and penultimate segment 1.5, 1.4, and 1.3 times their width, respectively; length of maxillary palp 0.8 times height of head; occipital carina absent, but with weak striae somewhat resembling a carina; length of eye in dorsal view 1.4 times temple (fig. 5); temple finely striate-coriaceous, dull, weakly roundly narrowed behind eyes; POL : diameter of ocellus : OOL = 5 : 4 : 10; frons and vertex coriaceous; face finely rugose-coriaceous; malar suture shallow; length of malar space 1.2 times basal width of mandible.

Mesosoma. — Maximum width of mesosoma equal to maximum width of head; length of mesosoma 1.2 times its height; precoxal sulcus reticulate-coriaceous anteriorly, more rugose posteriorly (fig. 1); rest of mesopleuron coriaceous; antero-dorsal part of propodeum rather coarsely reticulate and laterally coriaceous; posterior part of propodeum subvertical, medially, almost smooth, and with two pairs of posteriorly converging carinae.

Wings. — Fore wing: $r : 3-SR : SR1 = 8 : 20 : 27$; $SR1$ weakly sinuate (fig. 3); $1-CU1 : 2-CU1 = 1 : 28$; $2-SR : 3-SR : r-m = 11 : 20 : 9$; $m-cu$ antefurcal, and subparallel to $1-M$ (fig. 3).

Legs. — Hind coxa coriaceous dorsally; length of femur, tibia and basitarsus of hind leg 3.6, 7.6, and 5.2 times their width, respectively; length of hind spurs both 0.5 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its basal width, slightly coriaceous, almost smooth in front of dorsal carinae, and coarsely reticulate behind carinae; length of ovipositor sheath 0.70 times fore wing.

Colour. — Brownish-yellow; antenna (but radix yellowish), stemmaticum and ovipositor sheath, black; wing membrane uniformly light brownish; wing veins brown; pterostigma rather dark brown, but medially yellowish.

Redescribed after specimen in Muséum National d'Histoire Naturelle, Paris: "Labor. Colonial Museum, Abyssinie, Ara, Latham, 29.3.07", "Museum Paris, Abyssinie, 1910, J. Surcouf", "Conspecific with lectotype of *Gastrotheca furcata* G., Van Achterberg, 1978". Lectotype in same institute (in box 99 with label "Proctotrupide déterminé-Braconidae") and here designated: "63", "Museum Paris, Abyssinie, Ferret & Galinier, 1059 bis -92", "Type!", "*Gastrotheca furcata* Gue., Abyssinia" (an old handwritten label). Fore legs are absent, antenna and ovipositor are damaged, 1st metasomal suture weak, but complete, medial carina of mesoscutum present, but more weakly developed than in the specimen figured.

Shenefelt's statement (1978: 1815) that the type of *P. furcata* is the specimen in the Staatssammlung at Munich (from the locality "Port Natal") is not considered to be a lectotype designation. This ♀ is the only paralectotype and may belong to another species.

ASPIDOBRACONINA subtribus nov.

Diagnosis. — Head in lateral view of normal size (figs. 13, 29, 109); scapus truncate (figs. 15, 31, 45); clypeus without dorsal carina (figs. 26, 33, 91); dorsal margin of pronotal sides straight or bent downwards near notauli (figs. 13, 97, 109, 122); mesoscutum densely setose, and without medial carina (figs. 35, 46, 64); scutellar sulcus crenulate, wide to rather narrow (figs. 20, 46, 64); vein $SR1$ of fore wing straight; vein $cu-a$ of fore wing interstitial (fig. 30) to shortly postfurcal (figs. 14, 85); vein $1r-m$ of hind wing (rather) short (figs. 14, 30, 57); fore tibia without pegs or spines; propodeum with complete lamelliform medio-longitudinal carina (figs. 63, 146); antero-dorsal part of propodeum not distinctly differentiated from posterior part (figs. 54, 109); tubercles of propodeum absent (figs. 29, 54), except in *Entropobracon* (fig. 82) and lateral carina sometimes somewhat protruding (fig. 13); 1st—3rd tergites forming a rather strongly convex carapace (figs. 13, 29), with two deep transverse sutures (figs. 13, 29, 95, 121), with (figs. 29, 109) or without (figs. 41, 97) antero-lateral grooves; carapace with three pairs of spiracles situated distinctly above ventral rim (figs. 29, 82); 3rd tergite truncate posteriorly (figs. 27, 95); ventral margin of 2nd and 3rd tergites projected downwards (figs. 13, 29, 122), and lamelliform (figs. 13, 29, 68), except in *Philomacroploea* (fig. 97); 4th—6th tergites distinctly exposed, strongly sclerotized and sculp-

ured (figs. 13, 41, 68, 109), but largely smooth in *Apotosoma* (figs. 54, 67, 150).

Contains the genera *Apotosoma* gen. nov.; *Aspidobracon* gen. nov.; *Dioxybracon* Granger, 1949; *Eutropobracon* Ramakrishna Ayyar, 1928; *Hyboteles* gen. nov.; *Pedinopleura* gen. nov.; and *Philomacroploea* Cameron, 1905. The subtribe is restricted to the Palaecotronics and Japan.

Apotosoma gen. nov.

Type-species: *Apotosoma latimarginale* sp. nov.

Etymology: from "apotosmos" (Greek for "cut off, abrupt") and "soma" (Greek for "body"), because of the truncate apex of the metasoma. Gender: neuter.

Diagnosis. — Eye not emarginate (fig. 59), and with subocular groove (fig. 54); frons with narrow V-shaped groove near antennal sockets (figs. 64, 151); propleuron without flange posteriorly and normal (fig. 54); precoxal sulcus absent (fig. 54); pleural sulcus and mesosternal suture smooth; metapleural flange rather larger, obtuse and lamelliform (fig. 54); notauli absent (fig. 63), scutellar sulcus comparatively narrow (fig. 64); metanotum with complete lamelliform, non-protruding medio-longitudinal carina (fig. 64); vein cu-a of fore wing interstitial (fig. 57); tarsal claws nearly simple, somewhat protruding medially and finely pectinate subbasally (fig. 62); dorsal carinae of 1st tergite (largely) absent (figs. 66, 149) and without dorso-lateral carinae (figs. 54, 151); lateral margin of 2nd tergite gradually widened posteriorly (figs. 63, 151); 4th—6th tergites with deep transverse depressions basally (figs. 54, 67, 151); 6th tergite rather flat (fig. 54); ovipositor distinctly protruding beyond apex of metasoma, moderately long (fig. 54); hypopygium of ♀ rather large and somewhat protruding medio-apically.

Small genus, only known from New Guinea. Contains the type-species and *A. melateles* sp. nov. The biology is unknown.

Key to the species of the genus *Apotosoma*

1. Head and pterostigma yellowish-brown; lateral margin of 1st tergite comparatively wide and of 3rd tergite comparatively narrow (fig. 151); medial groove of vertex obsolescent (fig. 152); 1st and 2nd metasomal sutures narrowly sculptured (figs. 148, 151); 3 apical segments of antenna blackish, contrasting with other (yellowish) segments

(figs. 150); length of fore wing about 4 mm; 2nd and 3rd tergites smooth (fig. 149); antennal segments about 34 (♂); propodeum with lateral carinae posteriorly

- *melateles* sp. nov.
- Head largely black; pterostigma (dark) brown; lateral margin of 1st tergite comparatively narrow and of 3rd tergite comparatively wide (fig. 54); medial groove of vertex distinct (fig. 65); 1st and 2nd metasomal sutures more widely crenulate (figs. 54, 66); 3 apical segments of antenna dark brown, concolorous with preceding segments; length 5.0—5.6 mm; 2nd and 3rd tergites partly punctate (fig. 66); antennal segments about 46 (♀); propodeum without lateral carinae posteriorly (fig. 54)
- *latimarginale* sp. nov.

Apotosoma latimarginale sp. nov.

(figs. 54—67)

Holotype, ♀, length of body 5.8 mm, of fore wing 5.5 mm.

Head. — Antennal segments 46, length of 3rd segment 1.2 times 4th segment, length of 3rd, 4th, and penultimate segments 2.3, 2.0 and 1.2 times their width, respectively; length of maxillary palp 0.6 times height of head; length of eye in dorsal view 3.5 times temple (fig. 65); temple punctulate; POL : diameter of ocellus : OOL = 4 : 4 : 7; frons, vertex and face punctulate; length of malar space 1.3 times basal width of mandible; malar suture deep.

Mesosoma. — Length of mesosoma 1.3 times its height; ventral half of mesopleuron punctulate, rest smooth; episternal scrobe indistinct (fig. 54); mesoscutum and scutellum punctulate; surface of propodeum punctulate; lateral carina of propodeum absent (fig. 54).

Wings. — Fore wing: $r : 3-SR : SR1 = 10 : 27 : 68$; $2-SR : 3-SR : r-m = 18 : 27 : 11$; m-cu slightly converging to 1-M posteriorly (fig. 57).

Legs. — Hind coxa punctulate; length of femur, tibia, and basitarsus of hind leg 4.1, 9.5, and 6.4 times their width, respectively; length of hind spurs 0.35 and 0.30 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.7 times its apical width, its surface smooth, with shallow and crenulate medio-longitudinal suture and near anterior third with pair of depressions (fig. 66); 2nd tergite with some punctures and without antero-lateral grooves; 3rd tergite with pair of shallow antero-lateral grooves (fig. 54) and with some punctures (fig. 66); 2nd suture

coarsely crenulate and medially widened (fig. 66); apex of 6th tergite widely truncate and slightly emarginate medially (fig. 67); length of ovipositor sheath 0.31 times fore wing.

Colour. — Brownish-yellow; head (but temple ventrally, eye margins partly, mandible, labrum and pair of patches above toruli, yellowish), antenna (but radix, scapus and pedicellus partly apically, and annellus, yellowish), hind tarsus, and ovipositor sheath, black or dark brown; pterostigma, parastigma, and wing veins (but bases of C+SC+R, M+CU1 of both wings, and 1A of fore wing, completely yellowish), (dark) brown; wing membrane light brown.

Holotype in Rijksmuseum van Natuurlijke Historie, Leiden: "Neth. Ind.-Amer. New Guinea Exp., Lower Mist Camp, 14—1550 m, 31.i.1939, L. J. Toxopeus leg." Paratypes: 2 ♀ in same institute: "Neth. Ind.-American New Guinea Exped., Sigi Camp, 1500 m, 26.ii.1939, L. J. Toxopeus", other specimen from same locality, but 18.ii.1939.

Variation: Length of fore wing 5.0—5.6 mm, of body 5.5—5.8 mm; antennal segments 46 (2 ♀); length of ovipositor sheath 0.29—0.32 times fore wing.

***Apotosoma melateles* sp. nov.**
(figs. 149—152)

Holotype, ♂, length of body 3.6 mm, of fore wing 3.8 mm.

Head. — Antennal segments 34, length of 3rd segment 1.3 times 4th segment, length of 3rd, 4th and penultimate segments 2.4, 1.9, and 1.9 times their width, respectively; maxillary palp hidden in glue; length of eye in dorsal view 2.6 times temple (fig. 152); temple, frons and vertex, smooth; face punctulate; POL : diameter of ocellus = OOL = 3 : 3 : 10; length of malar space 1.3 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.5 times its height; mesopleuron smooth; episternal scrobe (virtually) absent; mesoscutum and scutellum smooth; surface of propodeum smooth; propodeum with short lateral carina posteriorly.

Wings. — Fore wing: r : 3-SR : SR1 = 5 : 12 : 33; 2-SR : 3-SR : r-m = 8 : 12 : 4; m-cu parallel to 1-M.

Legs. — Hind coxa smooth; length of femur, tibia, and basitarsus of hind leg 4.6, 9.6 and 8 times their width, respectively; length of hind tibial spurs 0.30 and 0.25 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.8 times

its apical width, its surface smooth, except for an indistinctly crenulate shallow medial groove (fig. 149), its lateral margin wide (fig. 151); 2nd and 3rd tergites smooth; 2nd suture narrowly crenulate medially (fig. 149); 2nd—6th tergites with indistinctly crenulate and oblique incomplete antero-lateral grooves (fig. 151).

Colour. — Yellowish-brown; pterostigma and wing veins yellowish-brown; wing membrane slightly infuscated; posterior half of hind tarsus, and 3rd—10th antennal segments somewhat infuscated; 3 apical antennal segments blackish (fig. 149), and rest of antenna yellowish.

Holotype in British Museum (Natural History), London: "Papua: Mondo, 5,000 ft, ii.1934, L. E. Cheesman, B.M. 1934—321".

***Aspidobracon* gen. nov.**

Type-species: *Aspidobracon pierrei* sp. nov.

Etymology: from "aspidos" (Greek for "shield") and the generic name "Bracon", because the metasoma is shield-like and the spp. resemble the genus *Bracon*. Gender: masculine.

Diagnosis. — Eye not emarginate (figs. 110, 132, 140), and without subocular groove (figs. 109, 122, 135); malar suture shallow (fig. 140); frons without V-shaped grooves (fig. 146); antescutal depression absent (fig. 109) or present as a narrow cleft (fig. 135); propleuron with narrow posterior flange (figs. 109, 122), but absent in *noyesi* sp. nov. (fig. 135), normal (fig. 109) to flat (fig. 135); precoxal sulcus at least shallowly impressed (figs. 109, 135); pleural sulcus (figs. 122, 135), and mesosternal suture (finely) crenulate; metapleural flange small (figs. 109, 122) or absent (fig. 135); notauli complete, not meeting posteriorly and smooth (figs. 117, 131) or finely crenulate (fig. 147); scutellar sulcus rather wide (figs. 117, 131); metanotum with complete (*pierrei* sp. nov.) or incomplete (other spp.) medial carina, slightly protruding dorsally (figs. 116, 122, 135); angle between veins 1-SR and C+SC+R of fore wing more than 70° (figs. 115, 127, 141); vein cu-a of fore wing interstitial (fig. 114); tarsal claws simple figs. 113, 130), but somewhat widened and finely pectinate in *noyesi* (fig. 142); dorsal carinae of 1st tergite present and united (figs. 132, 148), without dorso-lateral carinae (figs. 109, 122, 135); lateral margin of 2nd and 3rd tergites narrow, lamelliform, and not widened (fig. 135); 2nd tergite without medial carina (fig. 121); 3rd—5th tergites medially about as long as

laterally (fig. 121); 4th—6th tergites with shallow basal depressions (fig. 135); 6th tergite moderately convex (figs. 122, 135), and protruding medio-posteriorly (figs. 121, 134, 144); ovipositor shortly protruding beyond apex of metasoma (figs. 134, 135); hypopygium of ♀ variable.

Small genus, known from the Oriental (two spp.) and Afrotropical region (one sp.), and reared from Hesperidae and Nymphalidae-Acraeinae.

Key to the species of the genus *Aspidobracon*

1. Sixth tergite of metasoma comparatively acutely protruding apically (fig. 121); metanotum with complete medial carina (fig. 117); precoxal sulcus at least medially finely sculptured (fig. 109); propodeum distinctly sculptured medially (fig. 117); 2nd submarginal cell of fore wing somewhat longer (fig. 114; vein 3-SR about 3 times vein r); (Afrotropical) *pierrei* sp. nov.
- Sixth tergite less protruding apically (figs. 134, 144); posterior half of metanotum without medial carina (figs. 131, 147); precoxal sulcus smooth medially (figs. 122, 135); propodeum (except for medial carina and some crenulae) smooth medially (figs. 133, 147); 2nd submarginal cell of fore wing shorter (figs. 124, 138; vein 3-SR about 2 times vein r or less); (Oriental) 2
2. Temple behind eye with conspicuous black spot; body with black pattern; antennal segments of ♀ 35—37; scapus black; 6th tergite more gradually narrowed apically (fig. 144); claws more robust (fig. 142); (India) *noyesi* sp. nov.
- Temple behind eye without black spot; body (nearly) completely brownish-yellow; antennal segments of ♀ 33—34; scapus yellowish; 6th tergite more abruptly narrowed apically (fig. 134); claws less robust (figs. 130); (Sri Lanka) *hesperivorus* sp. nov.

Aspidobracon pierrei sp. nov. (figs. 109—121)

Holotype, ♀, length of body 3.0 mm, of fore wing 2.5 mm.

Head. — Antennal segments 31 (long and densely setose (figs. 111, 112)), length of 3rd antennal segment 1.1 times 4th segment, length of 3rd, 4th, and penultimate segments 2.0, 1.8, and 1.7 times their width, respectively; length of maxillary palp 0.8 times height of head; length

of eye in dorsal view 3.4 times temple (fig. 120); temple smooth; vertex, frons and face, punctulate; POL : diameter of ocellus : OOL = 7 : 5 : 19; length of malar space 1.4 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus coarsely (rugose-) punctate, rest of mesopleuron punctulate (fig. 109); mesoscutum and scutellum slightly punctulate; metanotum with complete medial carina (fig. 117); surface of propodeum coarsely transversely rugose (fig. 117).

Wings. — Fore wing: r : 3-SR : SR1 = 10 : 29 : 63; angle between 1-SR and C+SC+R 88° (fig. 115); 2-SR : 3-SR : r-m = 17 : 29 : 15; m-cu somewhat converging posteriorly to 1-M (fig. 114).

Legs. — Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 4.6, 8.0, and 5.3 times their width, respectively; length of hind spurs 0.4 and 0.3 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its apical width, its surface coarsely reticulate (fig. 121), its dorsal carinae weak; 2nd and 3rd tergites reticulate-rugose, with rather shallow antero-lateral grooves as in following tergites (fig. 109); 3rd and following tergites apically smooth, with a subapical transverse shallow groove (figs. 109, 121); 6th tergite rather acutely protruding posteriorly (fig. 121); length of ovipositor sheath 0.10 times fore wing; hypopygium medium-sized and apically truncate.

Colour. — Brownish-yellow; legs light yellowish; pterostigma and veins light brown; pedicellus slightly darker than scapus; wing membrane subhyaline.

Holotype in Muséum National d'Histoire Naturelle, Paris: "Gabon, Makokou, 0°34'N—12°52'E, 8.xii.1976, J. Pierre", "ovo-larval (?) parasite of *Acraea cepheus* on *Caloncoba wel-witschii* G.". Paratypes: 24 ♂ and 9 ♀ with same labels; pterostigma in both sexes sometimes dark brown, antenna (except scapus) also largely dark brown, and stemmaticum brown. However, males occur similarly coloured as ♀-holotype. Further 14 ♀ and 2 ♂ paratypes: "Mali, Koro, (caterpillar) on millet", "coll. 20.ix.1979, wlt's x.1979", one ♀ from December 13, 1979, Mopti Koro. Malar suture rather deep, mesosternal groove sometimes only finely crenulate, further as holotype.

Variation: antennal segments of ♀ 28 (1), 29 (3), 31 (4) or 32 (1), of ♂ 27 (1), 29 (5), or 30 (2); length of body 2.7—3.0 mm, of fore wing 2.2—

2.6 mm; length of ovipositor sheath 0.07—0.10 times fore wing. Paratypes are deposited in the museums at Leiden, Paris, London, and in the collections of USDA, Beltsville, and of Dr. D. Quicke (Nottingham).

Note. This species is named after Mr. Jacques Pierre (Paris), the specialist of the Acraeinae, who was the first to discover its host.

***Aspidobracon hesperivorus* sp. nov.**

(figs. 122—134)

Holotype, ♀, length of body 2.5 mm, of fore wing 2.6 mm.

Head. — Antennal segments 34, length of 3rd segment 1.2 times 4th segment, length of 3rd, 4th and penultimate segment 2.3, 2.0, and 2.0 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 3.2 times temple (fig. 132); temple, vertex, frons and face smooth and pubescent; POL : diameter of ocellus : OOL = 8 : 7 : 16; length of malar space 1.4 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus only impressed and smooth (fig. 122) rest of mesopleuron largely smooth dorsally, superficially coriaceous ventrally (fig. 122); mesoscutum smooth; scutellum sparsely punctulate; metanotum with short incomplete carina (fig. 131); surface of propodeum smooth (fig. 133).

Wings. — Fore wing: $r : 3-SR : SR1 = 6 : 9 : 36$; angle between 1-SR and C+SC+R 89° (fig. 126); $2-SR : 3-SR : r-m = 8 : 9 : 6$; m-cu slightly converging to 1-M posteriorly (fig. 124).

Legs. — Hind coxa coriaceous-punctulate; length of femur, tibia, and basitarsus of hind leg 4.2, 8.0, and 5.0 times their width, respectively; both hind spurs 0.3 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.5 times its apical width, its surface reticulate, and its dorsal carinae distinct (fig. 133); 2nd—5th tergites rugose-reticulate and with complete antero-lateral diverging grooves (fig. 122); 3rd—5th tergites smooth apically and with subapical transverse crenulate groove; 6th tergite rugulose, rather angled laterally, and rather weakly protruding medio-apically (fig. 134); length of ovipositor sheath 0.12 times fore wing; hypopygium medium-sized, somewhat protruding posteriorly.

Colour. — Brownish-yellow, antenna (except yellowish scapus), stemmaticum and ovipositor sheath, dark brown; pterostigma and most veins, brown; wing membrane subhyaline.

Holotype in British Museum (Natural History), London: "Ceylon, Galle, 19.vii.1928, Dr. J. C. Hutson, pupa of a Hesperid on paddy (*Oryza sativa*), 6802". The probable host is *Erionota thrax* (Linnaeus) (Dr. R. de Jong, pers. comm.). Paratypes: 7 ♀ and 5 ♂, all with same label, obviously a series of gregarious specimens. Deposited in the British Museum (Natural History), Rijksmuseum van Natuurlijke Historie at Leiden, and in the collection of Dr. D. Quicke (Nottingham).

Variation: Antennal segments of ♀ 33 (3) — 34 (3), of ♂ 31 (1) — 32 (3); length of body 2.5—2.9 mm, of fore wing 2.5—2.6 mm; length of ovipositor sheath 0.11—0.14 times fore wing.

***Aspidobracon noyesi* sp. nov.**

(figs. 135—148)

Holotype, ♀, length of body and of fore wing both 3.0 mm.

Head. — Antennal segments 37, length of 3rd segment 1.1 times 4th segment, length of 3rd, 4th and penultimate segment 2.2, 2.0, and 1.7 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 3.0 times temple (fig. 146); temple, frons (laterally), vertex, and face, punctulate; POL : diameter of ocellus : OOL = 5 : 3 : 9; length of malar space 1.4 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.1 times its height; precoxal sulcus only medially shallowly impressed and with some curved striae in front (fig. 134); rest of mesopleuron indistinctly punctulate; mesoscutum and scutellum smooth; metanotum with short incomplete carina anteriorly (fig. 147); surface of propodeum smooth, except for some crenulae near medial carina (fig. 147).

Wings. — Fore wing: $r : 3-SR : SR1 = 6 : 11 : 36$; angle between 1-SR and C+SC+R 74° (fig. 141); $2-SR : 3-SR : r-m = 9 : 11 : 6$; m-cu parallel to 1-M (fig. 138).

Legs. — Hind coxa largely smooth; length of femur, tibia and basitarsus of hind leg 3.5, 9.0, and 5.0 times their width, respectively; length of hind spurs 0.35 and 0.5 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its apical width, its surface coarsely rugose-reticulate, in front of dorsal carinae medially deeply impressed and with V-shaped crenulation (fig. 148), and dorsal carinae absent basally; 2nd—6th tergites coarsely rugose-reticulate, with shallow antero-lateral grooves; 3rd—5th tergites with subapical, transverse crenulate

grooves (fig. 135); 6th tergite gradually narrowed apically and only slightly angled laterally (fig. 144); length of ovipositor sheath 0.12 times fore wing; hypopygium large, and acute apically (fig. 135).

Colour. — Yellowish-brown; patch behind eyes, frons medially, stemmaticum and area behind it, scapus, pedicellus, mesonotal lobes largely, metasoma dorsally (but yellowish are: sides and base of metasoma, 1st and 2nd tergites medially widely, 3rd—6th tergites posteriorly and medially narrowly), black; rest of antenna, pterostigma (apically lighter), wing veins, and ovipositor sheath, dark brown; propodeum partly, humeral plate apically, base and apex of hind tibia, middle and hind tarsi infuscated; rest of legs, palpi, and temples ventrally, light yellowish; wing membrane slightly infuscated.

Holotype in British Museum (Natural History), London; "India: Karnataka, Mudigere, 26.x.—4.xi., 1979, J. S. Noyes". Paratypes: 3 ♀ (one in Rijksmuseum van Natuurlijke Historie, Leiden, rest in BM(NH)), two are topotypic and with same dates, the 3rd is labelled: "India: T. Nadu, Valparai, (Cinchona), 20—22.x.1979, J.S. Noyes".

Variation: Length of body 3.0—3.1 mm, of fore wing 2.8—3.1 mm; antennal segments 35 (2), 36 (1), and 37 (1); length of ovipositor sheath 0.10—0.13 times fore wing; colour rather variable; propodeum sometimes partly infuscated only and yellowish part of 3rd tergite wider medially or propodeum largely black and frons more extensively dark. This species is named in honour of Dr. J. S. Noyes, who brought together an important collection of Braconidae during his stay in India.

Dioxybracon Granger, 1949

Granger, 1949: 88; Shenefelt, 1978: 1683.

Type-species: *Dioxybracon bimucronatus* Granger, 1949 (original designation). Gender: masculine.

Diagnosis. — Eyes not emarginate (fig. 26); and with subocular groove (fig. 21); frons without V-shaped groove; occipital flange narrow, much narrower than width of base of mandible, and close to base of mandible (figs. 13, 26); propleuron comparatively convex and without distinct posterior flange (fig. 13); precoxal sulcus absent; mesopleuron sparsely sculptured (fig. 13); pleural sulcus and mesosternal suture smooth; middle lobe of mesoscutum without

pair of grooves anteriorly (fig. 20); notauli present (fig. 20); scutellar sulcus wide (fig. 20); medial carina of metanotum complete, lamelliform and obtusely protruding (fig. 13); vein cu-a of fore wing slightly postfurcal (fig. 14); tarsal claws with acute lamella (fig. 22); dorsal carinae of 1st tergite complete, lamelliform and running parallel posteriorly (fig. 27); lateral margin of 3rd tergite lamelliform and wider than margin of 2nd tergite (fig. 13); 4th and 5th tergites rather weakly impressed basally (fig. 13); 6th tergite deeply incised medio-apically (fig. 28); ovipositor distinctly protruding beyond apex of metasoma medium-sized (fig. 13); hypopygium of ♀ subtruncate apically and medium-sized.

Small genus, contains the type-species only and is restricted to Malagasy. The biology is unknown.

Dioxybracon bimucronatus Granger (figs. 13—28)

Granger, 1949: 89, fig. 116; Shenefelt, 1978: 1683.

Paralectotype, ♀, length of body 5.6 mm, of fore wing 4.0 mm.

Head. — Antennal segments 43 (according to original description 42—43), length of 3rd segment 1.3 times 4th segment, length of 3rd, 4th, and penultimate segment 1.9, 1.5, and 1.3 times their width, respectively; length of maxillary palp 0.6 times height of head; length of eye in dorsal view 3.2 times temple (fig. 23); frons, vertex and face sparsely punctulate; POL : diameter ocellus : OOL = 7 : 7 : 15; length of malar space 1.4 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.5 times its height; mesopleuron sparsely punctulate (fig. 13); mesoscutum and scutellum finely punctate; surface of propodeum largely finely rugose, but anteriorly smooth and with some transverse striae near medial carina (fig. 20).

Wings. — Fore wing: $r : 3-SR : SR1 = 6 : 16 : 38$; angle between 1-SR and C+SC+R 60° (fig. 25); $2-SR : 3-SR : r-m = 12 : 16 : 8$; m-cu converging to 1-M posteriorly and short (fig. 14).

Legs. — Hind coxa smooth; length of femur, tibia, and basitarsus of hind leg 3.8, 6.8, and 6.4 times their width, respectively; length of hind spurs 0.3 and 0.45 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.5 times its apical width, its surface coarsely reticulate, and in front of dorsal carinae slightly concave (fig. 27); 2nd tergite without antero-lateral grooves, weak on 3rd tergite (fig. 13); 2nd—6th tergites coarsely reticulate; 2nd—4th tergite

slightly serrate apically (fig. 13); length of ovipositor sheath 0.26 times fore wing; hypopygium subtruncate apically and medium-sized.

Colour. — Brownish-yellow; scapus, pedicellus, and ovipositor sheath, dark brown; pterostigma, antenna (except both basal segments), veins C+SC+R (except base), and 1-R₁, and parastigma, brown; wing membrane slightly infuscated.

Lectotype here designated, ♀, in Muséum National d'Histoire Naturelle, Paris: "Madagascar, Bekily, Reg. Sud de l'île", "Muséum Paris, xi.36, A. Seyrig", "Type". Paralectotypes, 2 ♀ topotypic; figured ♀ collected in March, 1930, not in February as mentioned by Granger.

Eutropobracon Ramakrishna Ayyar, 1928, stat. nov.

Ramakrishna Ayyar, 1928: 40; Shenefelt, 1978: 1461 (synonym of *Bracon* Fabricius).

Type-species: *Eutropobracon indicus* Ramakrishna Ayyar, 1928 (original designation). Gender: masculine.

Diagnosis. — Eyes not emarginate and without subocular groove (figs. 82, 91); frons with medial groove (fig. 93); occipital flange narrow and close to base of mandible (fig. 82); antescutal depression absent; propleuron without posterior flange (fig. 82); precoxal sulcus slightly impressed (fig. 82); mesopleuron distinctly sculptured (fig. 82); pleural sulcus finely crenulate (fig. 82); mesosternal suture smooth; middle lobe of mesoscutum without grooves (fig. 92); notauli complete and finely crenulate (fig. 92); scutellar sulcus wide (fig. 92); medial carina of metanotum short (fig. 92), not protruding (fig. 82); propodeum with tubercles (fig. 82); angle between veins 1-SR and C+SC+R of fore wing about 55° (fig. 84); vein cu-a of fore wing shortly postfurcal (fig. 85); tarsal claws with obtuse lobe (fig. 90); dorsal carinae of 1st tergite complete, united in one curve posteriorly and lamelliform (fig. 95); lateral margin of 3rd tergite narrow and lamelliform (fig. 82); 3rd—5th tergites medially much shorter than laterally (figs. 82, 95); 5th and 6th tergites distinctly impressed basally and convex (fig. 82); 6th tergite apically truncate and lamella slightly upcurved (figs. 82, 96); ovipositor far protruding beyond apex of metasoma, long (figs. 82, 86); hypopygium of ♀ rather large and truncate apically.

Small genus, contains the type-species only

and is known only from India. The biology is unknown.

Eutropobracon indicus Ramakrishna Ayyar, stat. nov.

(figs. 82—96)

Ramakrishna Ayyar, 1928: 40, 41, fig. XI-3; Shenefelt, 1978: 1498 (as synonym of *Bracon koshunensis* Watanabe, 1934).

Lectotype, ♀, length of body and of fore wing both 3.5 mm.

Head. — Antennal segments 34, length of 3rd segment 1.1 times 4th segment, length of 3rd, 4th and penultimate segments 2.0, 1.8 and 1.8 times their width, respectively; length of maxillary palp 0.6 times height of head; length of eye in dorsal view 2.6 times temple (fig. 93); frons, vertex and face punctulate; POL : diameter of ocellus : OOL = 9 : 8 : 18; length of malar space 0.9 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.4 times its height; mesopleuron rather coarsely punctate (fig. 82); mesoscutum and scutellum punctulate (fig. 92); surface of propodeum largely smooth, except some crenulae near medial carina and rugae near tubercles (figs. 82, 92).

Wings. — Fore wing: r : 3-SR : SR₁ = 7 : 11 : 36; angle between 1-SR and C+SC+R 55° (fig. 84); 2-SR : 3-SR : r-m = 10 : 11 : 8; m-cu parallel to 1-M (fig. 85).

Legs. — Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.6, 8.3 and 6.2 times their width, respectively; length of hind spurs both 0.5 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.5 times its apical width, its surface largely smooth (fig. 94), and its dorso-lateral carinae behind spiracles strong and lamelliform (fig. 82), slightly concave in front of dorsal carinae; 2nd—6th tergites reticulate-punctate, with shallow antero-basal, curved and crenulate depressions (fig. 82); medial length of 3rd tergite 0.6 times medial length of 2nd tergite (fig. 95); 2nd suture narrowly crenulate (fig. 95); length of ovipositor sheath 0.63 times fore wing.

Colour. — Brownish-yellow; 2nd—5th tergites with pair of sublateral brown patches; pterostigma brown; apex of antenna, ovipositor sheath, stemmaticum partly, and hind tarsus largely, dark brown; wing membrane hyaline.

Lectotype here designated, in Tamil Nadu University, Coimbatore: "S. India, Walayar

forests (now state of Kerala), 29—30 Nov. 1924, Ramakrishna Coll." Paralectotypes: 4 ♀, of which 1 ♀ examined; same label as lectotype, and a label "*Eutopobracon indica* (sic!) n.g. & sp.". Very similar to lectotype, length of fore wing 3.3 mm, of body 3.4 mm, length of ovipositor sheath 0.67 times fore wing.

Hyboteles gen. nov.

Type-species: *Hyboteles toxopeusi* sp. nov.

Etymology: from "hybos" (Greek for "hump") and "telos" (Greek for "end"), because of the humped apical segment of the metasoma. Gender: neuter.

Diagnosis. — Eyes not emarginate (fig. 76) and with subocular groove deep (figs. 68, 72); frons with medial groove only (fig. 79); occipital flange narrow and close to base of mandible; posterior flange of propleuron obsolete (fig. 68); precoxal sulcus absent; mesopleuron largely smooth; pleural sulcus and mesosternal suture smooth; middle lobe of mesoscutum without grooves (fig. 78); notauli complete and slightly crenulate (fig. 78); scutellar sulcus wide (fig. 78); medial carina of metanotum short (fig. 78) and not protruding (fig. 68); propodeum without tubercles; angle between veins 1-SR and C+SC+R about 45°; vein cu-a of fore wing subinterstitial (fig. 73); claws without lobe (fig. 75); dorsal carinae of 1st tergite united and connected to medial carina (fig. 80); lateral margin of both 2nd and 3rd tergites narrow and lamelliform (fig. 68); 4th and 5th tergites shallowly depressed anteriorly; metasomal tergites without antero-lateral depressions (fig. 68); 6th tergite deeply impressed basally and truncate apically (figs. 68, 81); ovipositor sheath protruding but short (fig. 68); hypopygium of ♀ large and subtruncate apically.

Small genus, contains the type-species only, and is restricted to New Guinea and North Australia. The biology is unknown.

Hyboteles toxopeusi sp. nov. (figs. 68—81)

Holotype, ♀, length of body 5.7 mm, of fore wing 5.0 mm.

Head. — Antennal segments 45, length of 3rd segment 1.2 times 4th segment, length of 3rd, 4th, and penultimate segments 2.0, 1.6, and 1.7 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 4.0 times temple (fig. 79); POL : diameter of ocellus : OOL = 4 : 3 : 6; frons, vertex and face smooth; anterior tentorial pits

more pronounced than in the other taxa (fig. 76); length of malar space 1.2 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.4 times its height; mesopleuron indistinctly punctulate (fig. 68); mesoscutum slightly punctulate (fig. 78); scutellum smooth; surface of propodeum sparsely and finely punctulate (fig. 78).

Wings. — $r : 3\text{-SR} : \text{SR1} = 14 : 31 : 54$; angle between 1-SR and C+SC+R 44° (fig. 69); $2\text{-SR} : 3\text{-SR} : r\text{-m} = 19 : 31 : 13$; m-cu converging to 1-M posteriorly (fig. 73).

Legs. — Hind coxa punctulate; length of femur, tibia and basitarsus of hind leg 4.4, 9.7, and 6.8 times their width, respectively; length of hind tibial spurs 0.20 and 0.25 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its apical width, its surface coarsely longitudinally rugose, with finer reticulation between rugae (fig. 80), weakly concave and smooth in front of dorsal carinae; 2nd—6th tergites with coarse longitudinal rugae and finer reticulation in interspaces (figs. 80, 81); length of ovipositor sheath 0.12 times fore wing.

Colour. — Brownish-yellow; apical 17 segments of antenna yellowish, rest of flagellum, outer side of scapus and pedicellus, pterostigma and ovipositor sheath, dark brown; apical half of hind tarsus infuscated; wing veins brown; wing membrane light brown.

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Neth. Ind.-Amer. New Guinea Exp. 1938—39, Hollandia vii.(19)38, L. J. Toxopeus lg.". Paratypes in British Museum (Natural History), London, and Rijksmuseum van Natuurlijke Historie, Leiden: "Mackay, Queensland, 1909—45" (1 ♀) and "Australia, N. Queensland, Redlynch, 20.x.1938", "Papuan Australian Expedition B.M. 1947—48" (17 ♂). Named in honour of its collector Prof. Dr. L. J. Toxopeus (1894—1951), who collected many new species of Braconidae in New Guinea.

Variation: Antennal segments of ♀ 43—45, of ♂ 35 (1)—37 (4)—38 (1); length of body of ♀ 5.1—5.7 mm, of ♂ 3.3—4.2 mm; length of fore wing of ♀ 5.0—5.2 mm, of ♂ 3.3—4.0 mm; 5—17 apical segments of antenna yellowish (-brown), usually 8 segments.

Pedinopleura gen. nov.

Type-species: *Pedinopleura emarginata* sp. nov.

Etymology: from "pedinos" (Greek for

"flat") and "pleura" (Greek for "side"), because of the flattened propleuron. Gender: feminine.

Diagnosis. — Eyes with deep subocular groove (figs. 29, 33, 41) and not or indistinctly emarginate (figs. 33, 52); frons with medial groove only (figs. 32, 44); occipital flange very large, about as wide as mandible base and distinctly removed from base of mandible (figs. 29, 33, 41, 52); malar suture distinct (fig. 33); posterior flange of propleuron present (figs. 29, 41); propleuron flattened (fig. 29); precoxal sulcus absent; mesopleuron densely sculptured (figs. 29, 41); pleural sulcus and mesosternal suture smooth; middle lobe of mesoscutum with pair of grooves anteriorly (figs. 35, 46); notauli complete and smooth; scutellar sulcus medium-sized (figs. 35, 46); medial carina of metanotum complete and lamelliform (figs. 35, 46), distinctly protruding (figs. 29, 41); propodeum without tubercles (lamelliform carina may be present: fig. 41); angle between veins 1-SR and C+SC+R = 50° – 65° (figs. 36, 48); vein cu-a of fore wing (sub)interstitial (figs. 30, 43); surroundings of vein cu-a of hind wing glabrous (fig. 34); claws at most with minute acute lobe (fig. 51); dorsal carinae of 1st tergite parallel-sided posteriorly and lamelliform (figs. 39, 53); lateral margin of 3rd tergite widened, wider than margin of 2nd tergite medially (figs. 29, 41); 4th–6th tergites deeply impressed basally (figs. 29, 41); 2nd–6th tergites with groove to spiracles (*P. emarginata*, fig. 29) or without grooves (*P. koshunensis*, fig. 41); 6th tergite (shallowly) emarginate medio-apically (figs. 40, 47); ovipositor sheath distinctly protruding, medium-sized (figs. 29, 41); hypopygium of ♀ medium-sized and truncate apically.

Key to species of the genus *Pedinopleura* nov.

1. Lateral lamella of 1st–3rd tergites wide, and emarginate near level of 2nd metasomal spiracle (fig. 29); 3rd–5th tergites completely yellowish; anterior depressions of 4th–6th tergites largely smooth (figs. 29, 40); face only punctulate (fig. 33); only lateral aspect of scapus and pedicellus partly black; 6th tergite of ♀ widely emarginate (fig. 40); Australian (New Guinea)

. *emarginata* sp. nov.
 — Lateral lamella of 1st–3rd tergites narrow and not emarginate (fig. 41); 3rd–5th tergites with pair of black spots; anterior depressions of 4th–6th tergites distinctly crenulate (fig. 41); face distinctly transversely

rugulose (fig. 52); scapus and pedicellus completely black; 6th tergite of ♀ more acutely incised (fig. 47); Oriental (Taiwan)

. *koshunensis* (Watanabe)

Pedinopleura emarginata sp. nov.

(figs. 29–40)

Holotype, ♀, length of body 6 mm, of fore wing 4.8 mm.

Head. — Remaining antennal segments 26, apical segments missing, length of 3rd segment 1.3 times 4th segment, length of 3rd and 4th segment 2.2 and 1.7 times their width, respectively; length of maxillary palp 0.7 times height of head; length of eye in dorsal view 3.8 times temple (fig. 32); POL : diameter of ocellus : OOL = 4 : 3 : 6; frons and vertex smooth; face punctulate; length of malar space 1.2 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.5 times its height; mesopleuron densely punctulate and setose (fig. 29); metapleural flange comparatively large and obtuse (fig. 29); mesoscutum and scutellum punctulate; surface of propodeum smooth, with posterior third of lateral carina present posteriorly (fig. 29).

Wings. — Fore wing: r : 3-SR : SR1 = 8 : 18 : 41; angle between 1-SR and C+SC+R 63° (fig. 36); 2-SR : 3-SR : r-m = 12 : 18 : 9; m-cu converging to 1-M posteriorly (fig. 30).

Legs. — Hind coxa punctulate; femur, tibia and basitarsus of hind leg 3.8, 8.8, and 5.8 times their width, respectively; length of hind spurs both 0.3 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its apical width, its surface with some rugae, rest smooth and dorsal carinae absent basally (fig. 39); lateral margin of 1st–3rd tergites very wide and emarginate near 2nd spiracle (fig. 29); 4th–6th tergites deeply impressed and largely smooth basally (fig. 29); 2nd tergite reticulaterugose, 3rd–6th tergites only (partly obliquely) rugose (figs. 29, 39, 40); 6th tergite widely emarginate (fig. 40); length of ovipositor sheath 0.21 times fore wing.

Colour. — Yellowish-brown; small patch behind stematicum, outer side of scapus and pedicellus, and ovipositor sheath, blackish; hind tarsus largely infuscated; pterostigma and most veins, dark brown; vein C+SC+R of fore wing largely yellowish; rest of antenna brown; wing membrane somewhat infuscated.

Holotype in British Museum (Natural History), London: "Papua: Mondo, 5,000 ft, ii.1934, L. E. Cheesman, B.M. 1934–321".

Pedinopleura koshunensis (Watanabe)

comb. nov.

(figs. 41—53)

Bracon koshunensis Watanabe, 1934: 186, 187, fig. 1; Shenefelt, 1978: 1498.

Holotype, ♀, length of body 5.2 mm, of fore wing 3.7 mm.

Head. — Antennal segments 37 (according to original description 37—46), length of 3rd segment 1.1 times 4th segment, length of 3rd, 4th and penultimate segments 1.6, 1.4, and 1.3 times their width, respectively; length of maxillary palp 0.6 times height of head; length of eye in dorsal view 2.5 times temple (fig. 44); temple punctate, dorsally aciculate-striate (fig. 41); frons obliquely finely rugose (fig. 44); vertex and face transversely rugose; POL : diameter of ocellus: OOL = 3 : 4 : 10; length of malar space 1.4 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.4 times its height; mesopleuron densely and coarsely punctate anteriorly, remotely punctulate posteriorly (fig. 41); metapleural flange small (fig. 41); mesoscutum medially punctate-coriaceous, laterally rugulose; scutellum punctulate (fig. 46); surface of propodeum superficially rugulose; lateral carina of propodeum long, lamelliform and anteriorly angular (fig. 41).

Wings. — Fore wing: r : 3-SR : SR1 = 7 : 19 : 42; angle between 1-SR and C+SC+R 52° (fig. 48); 2-SR : 3-SR : r-m = 12 : 19 : 9; m-cu converging to 1-M posteriorly and comparatively short (fig. 43).

Legs. — Hind coxa smooth; length of femur, tibia and basitarsus of hind leg 3.2, 6.2 and 5.3 times their width, respectively; length of hind spurs 0.3 and 0.4 times hind basitarsus.

Metasoma. — Length of 1st tergite 0.5 times its apical width, its surface reticulate and dorsal carinae present basally (fig. 53); lateral margin of 1st—3rd tergites rather narrow, gradually widened posteriorly (fig. 41); 4th—6th tergites with deep and crenulate basal groove (fig. 41); 2nd—6th coarsely reticulate-rugose; 6th tergite rather weakly acutely emarginate (fig. 47); length of ovipositor sheath 0.19 times fore wing.

Colour. — Yellowish-brown; 3rd—5th tergites with a dark spot at each side; antenna and ovipositor sheath, black; stemmaticum infuscated; pterostigma and parastigma dark brown; wing membrane subhyaline.

Holotype in the Institut für Pflanzenschutz-

forschung at Eberswalde-Finow (and not in Sapporo as indicated by Shenefelt): "Kankau (=Koshun), (Formosa), H. Sauter, vii.1912", "*Bracon koshunensis* Watanabe, ♀, Type". Paratypes: 2 ♂ and 6 ♀, of which are examined 1 ♂ (Eberswalde-Finow, "allotype") and 3 ♀ (two at Eberswalde-Finow and one in Budapest Museum). Male has antenna yellowish and also 6th tergite with pair of black dots and apically slightly emarginate, antennal segments 52 (not 49—50 as stated in original description); length of antenna equal to length of body (distinctly shorter in ♀, fig. 41).

Variation: Antennal segments 37—52; length of body 5.2—6 mm, of fore wing 3.7—4.3 mm; length of ovipositor sheath 0.19—0.20 times fore wing.

Philomacroploea Cameron, 1905

Cameron, 1905: 87; Shenefelt, 1978: 1713—1714.

Type-species: *Philomacroploea basimacula* Cameron, 1905 (monotypic). Gender: feminine.

Diagnosis. — Eyes without subocular groove (fig. 97) and not emarginate (fig. 106); frons and vertex with shallow medio-longitudinal depression (fig. 101); occipital flange narrow and close to mandible base (fig. 97); malar suture rather deep (figs. 97, 106); antescutal depression present (fig. 97); posterior flange of propleuron absent; propleuron normal (fig. 97); precoxal sulcus only medially impressed (fig. 97); mesopleuron distinctly sculptured anteriorly (fig. 97); pleural sulcus and mesosternal suture finely crenulate (fig. 97); middle lobe of mesoscutum without grooves; notauli crenulate and probably complete (fig. 105); scutellar sulcus medium-sized (fig. 105); medial carina only anteriorly present at metanotum (fig. 105) and slightly obtusely protruding dorsally (fig. 97); propodeum without tubercles and no lateral carina (fig. 97); angle between veins 1-SR and C+SC+R of fore wing about 70° (fig. 103); vein cu-a of fore wing interstitial (fig. 98); surroundings of vein cu-a of hind wing densely setose; claws simple (fig. 102); dorsal carinae of 1st tergite united and connected to medial carina (fig. 107) and dorso-lateral carinae indistinct (fig. 97); 1st—3rd tergites without differentiated lateral lamelliform margin (fig. 97); 4th—6th tergites slightly impressed basally (fig. 97); 2nd—6th tergite without antero-lateral grooves; 6th tergites (shallowly) semi-circularly emarginate medio-apically (fig. 108, but less in ♂); ovipositor sheath of type-species short (fig.

97); hypopygium of ♀ medium-sized and obtusely protruding apically.

Small genus, known from the Oriental region and probably Japan. The type-species has been reared from Nymphalidae-Danainae. According to Shenefelt (1978) 3 spp. should be included: the type-species (with short ovipositor, fig. 97), *P. pleuralis* (Ashmead, 1906) with ovipositor sheath as long as metasoma, and *P. cameroni* Subba Rao & Sharma, 1960. However, the inclusion of the latter two species may be incorrect.

***Philomacroploea basimacula* Cameron**
(figs. 97—108)

Cameron, 1905: 88 (♀, not ♂); Shenefelt, 1978: 1713, 1714.

Lectotype, ♀, length of body 3.8 mm, of fore wing 3.4 mm.

Head. — Antenna incomplete, remaining segments 19, length of 3rd segment 1.3 times 4th segment, length of 3rd and 4th segments 1.5 and 1.2 times their width, respectively; length of maxillary palp of paralectotype 0.4 times height of head; length of eye in dorsal view 2.6 times temple; POL : diameter of ocellus : OOL = 10 : 9 : 14; frons, vertex and face smooth; length of malar space 1.2 times basal width of mandible.

Mesosoma. — Length of mesosoma 1.2 times its height; mesopleuron partly rugulose anteriorly, rest punctulate (fig. 97); metapleural flange small and blunt (fig. 97); mesoscutum and scutellum finely punctulate; surface of propodeum largely smooth, but antero-laterally with patch of punctures (figs. 97, 105).

Wings. — Fore wing: $r : 3-SR : SR1 = 11 : 19 : 66$; angle between 1-SR and C+SC+R 67° (fig. 103); $2-SR : 3-SR : r-m = 17 : 19 : 12$; m-cu subparallel to 1-M (fig. 98).

Legs. — Hind coxa punctulate; length of femur, tibia and basitarsus of hind leg 4.4, 8.2 and 5.0 times their width, respectively; length of hind spurs 0.25 and 0.3 times basitarsus.

Metasoma. — Length of 1st tergite 0.6 times its apical width, its surface (punctate-)reticulate (fig. 107); 2nd tergite with medial carina (fig. 107); 2nd—6th tergite punctate-reticulate (fig. 97); length of ovipositor sheath 0.07 times fore wing.

Colour. — Dark brown; head, mesosoma (but ventral half of mesopleuron, metapleuron, and mesosternum dark), brown; legs, palpi, tegulae, ovipositor sheath, large patch at posterior half of 1st and 2nd tergite medially, posterior

margins of 3rd—5th tergites, brownish-yellow; wing membrane subhyaline; pterostigma dark brown, veins rather dark brown.

Lectotype here designated, in British Museum (Natural History), London: "Type", "B.M. Type Hym. 3.c.506", "*Philomacroploea* (sic!) *basimacula* Cam., Type, Ceylon, Bred" (in Cameron's handwriting), "P. Cameron Coll., 1914—110". Paralectotype: 1 ♀, same museum and labels as lectotype.

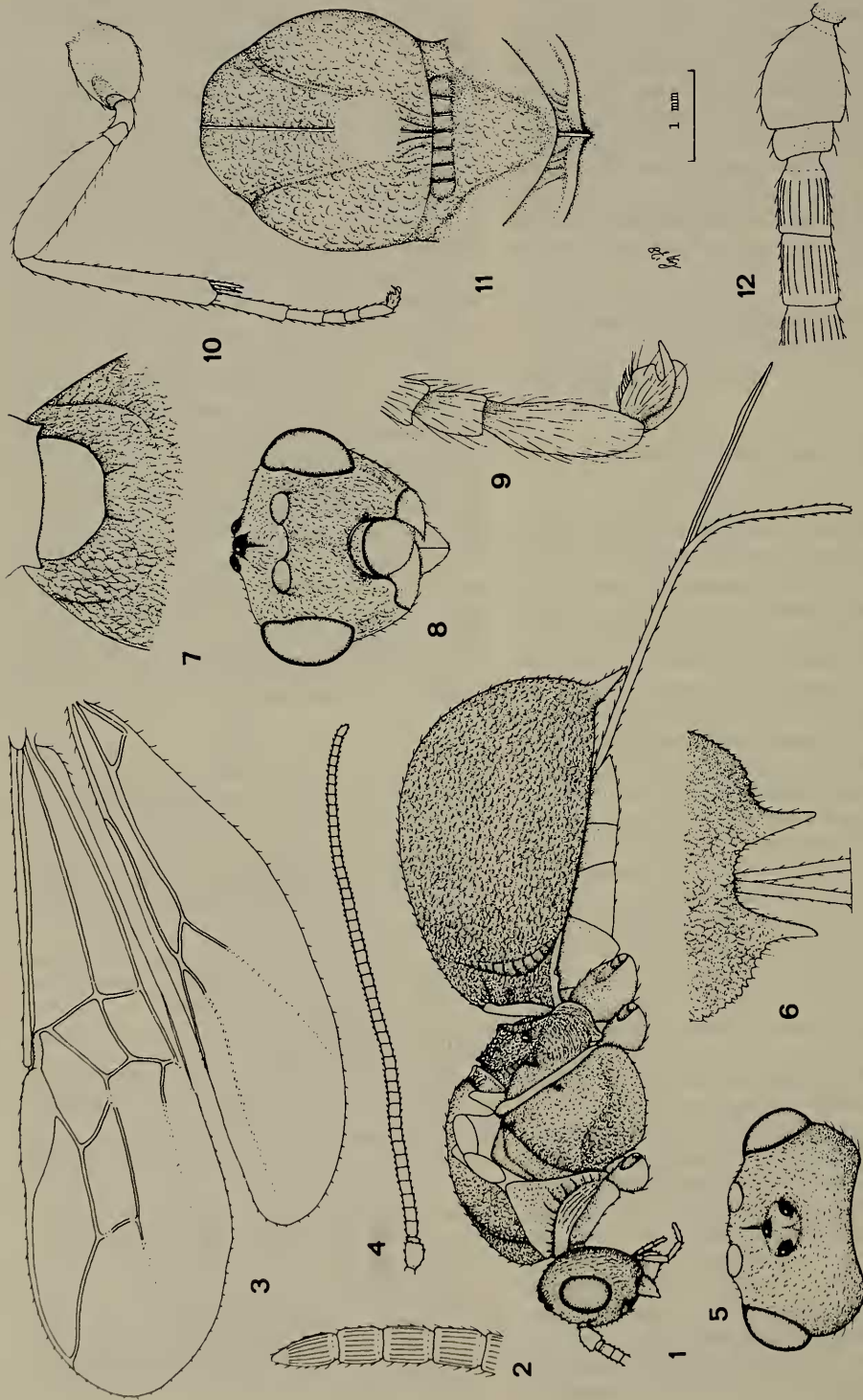
Variation: Length of body 3.7—3.8 mm, of fore wing 3.3—3.4 mm, length of ovipositor sheath 0.07—0.10 times fore wing.

ACKNOWLEDGEMENTS

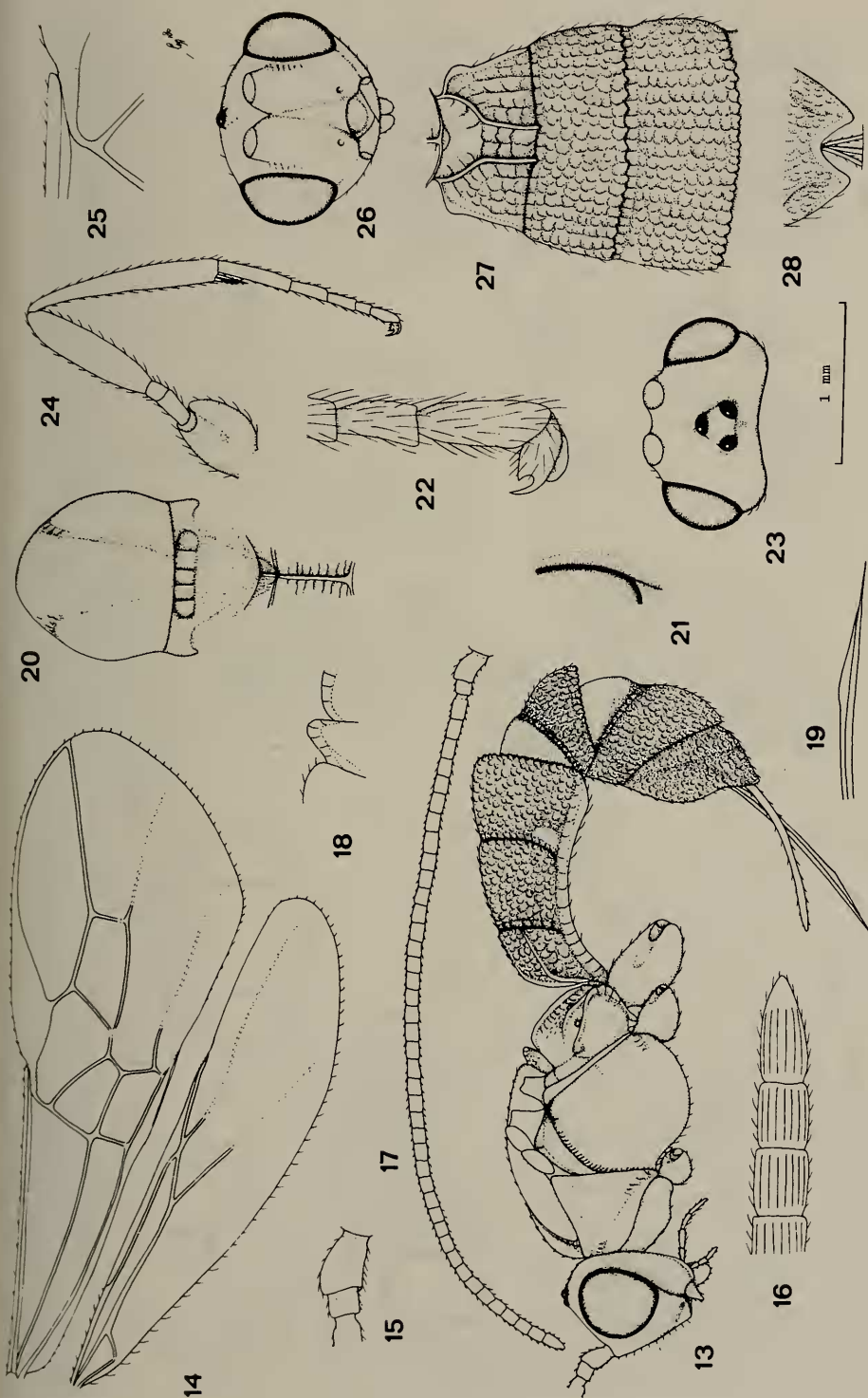
I wish to express my gratitude to the following persons for the loan of types and of new taxa: especially to Dr. K. D. Ghorpade (Hebbal, Bangalore) who travelled a long distance to collect the Ramakrishna Ayyar-types, to Mr. T. Huddleston (London), Dr. S. Kerner-Pillault (Paris), Prof. Dr. T. Kumaraswami (Coimbatore), Dr. J. Oehlke (Eberswalde-Finow), Dr. J. Papp (Budapest), Mr. J. Pierre (Paris), Dr. D. Quicke (Nottingham), and Mr. B. Sigwalt (Paris). Dr. R. Wharton (College Station) provided useful corrections to the text.

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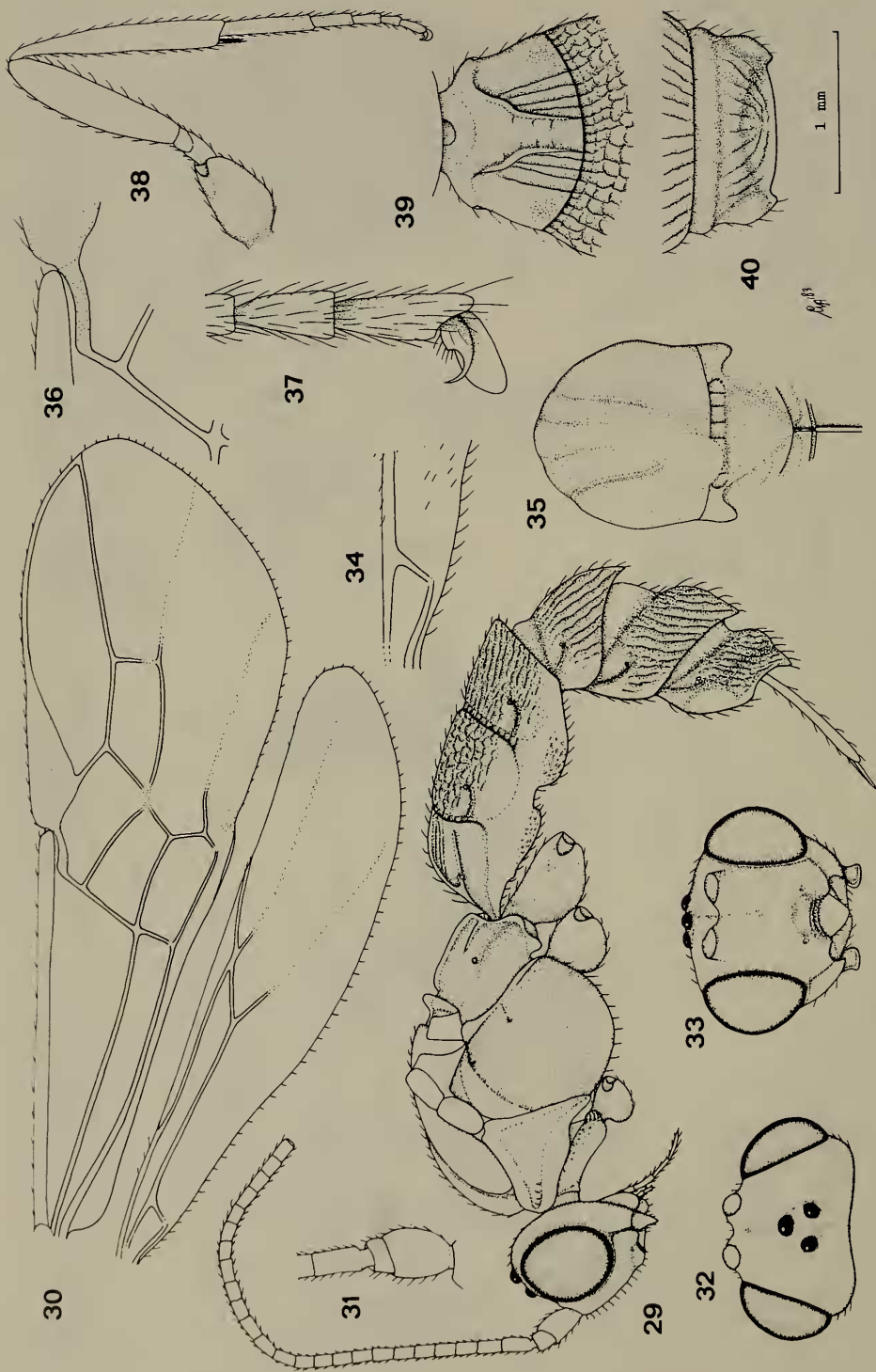
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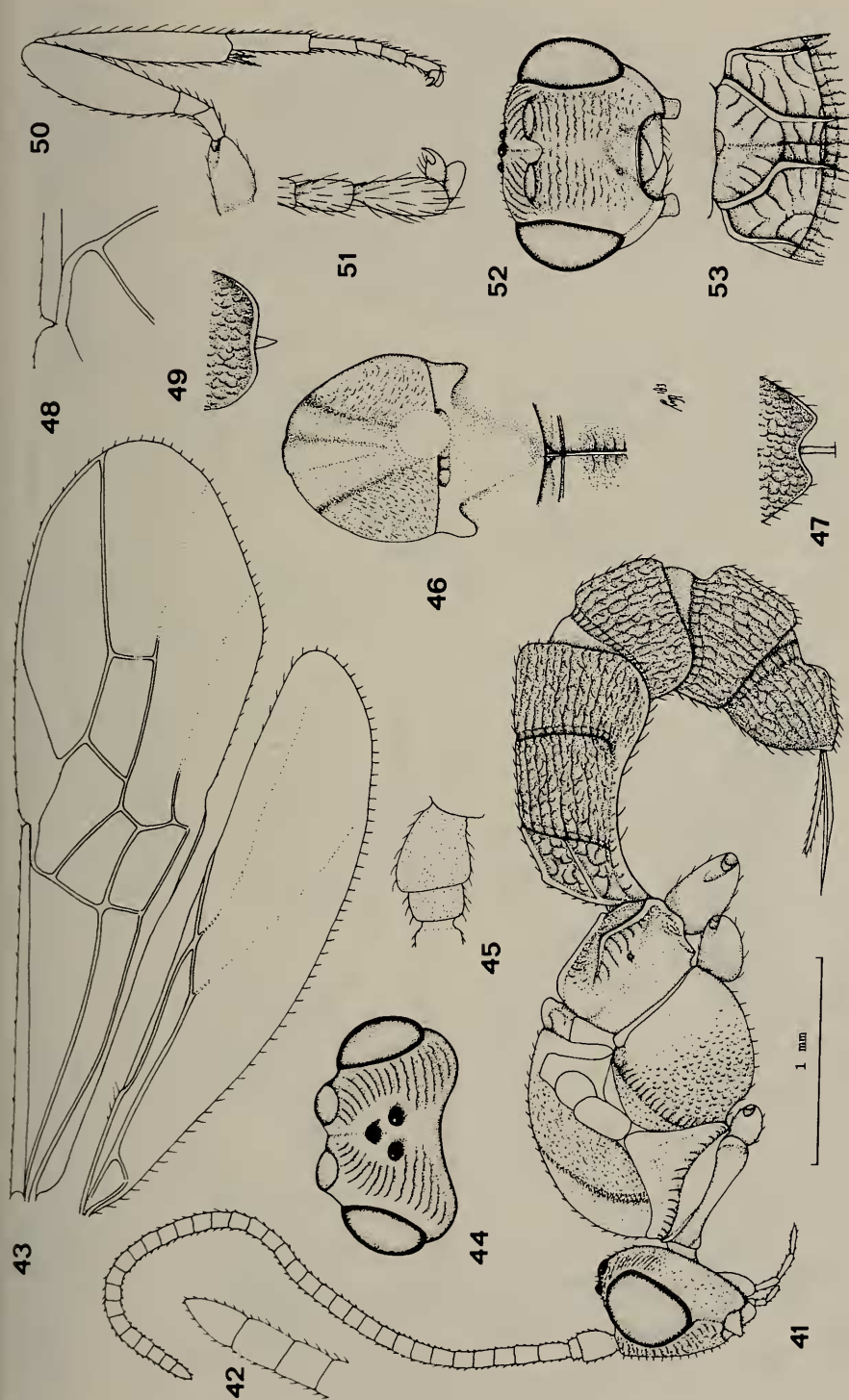
Figs. 1—12. *Physaraia furcata* (Guérin-Méneville), Ethiopia, Ara, ♀. 1, habitus, lateral aspect; 2, apex of antenna; 3, wings; 4, antenna; 5, head, dorsal aspect; 6, apex of 3rd tergite, dorsal aspect; 7, 1st tergite, dorsal aspect; 8, head, frontal aspect; 9, outer hind leg; 10, outer hind claw; 11, thorax, dorsal aspect; 12, base of antenna, outer aspect. 1, 3, 4, 10: scale-line (= 1 ×); 2, 9, 12: 5 ×; 5, 8, 11: 2 ×; 6, 7: 1.1 ×.



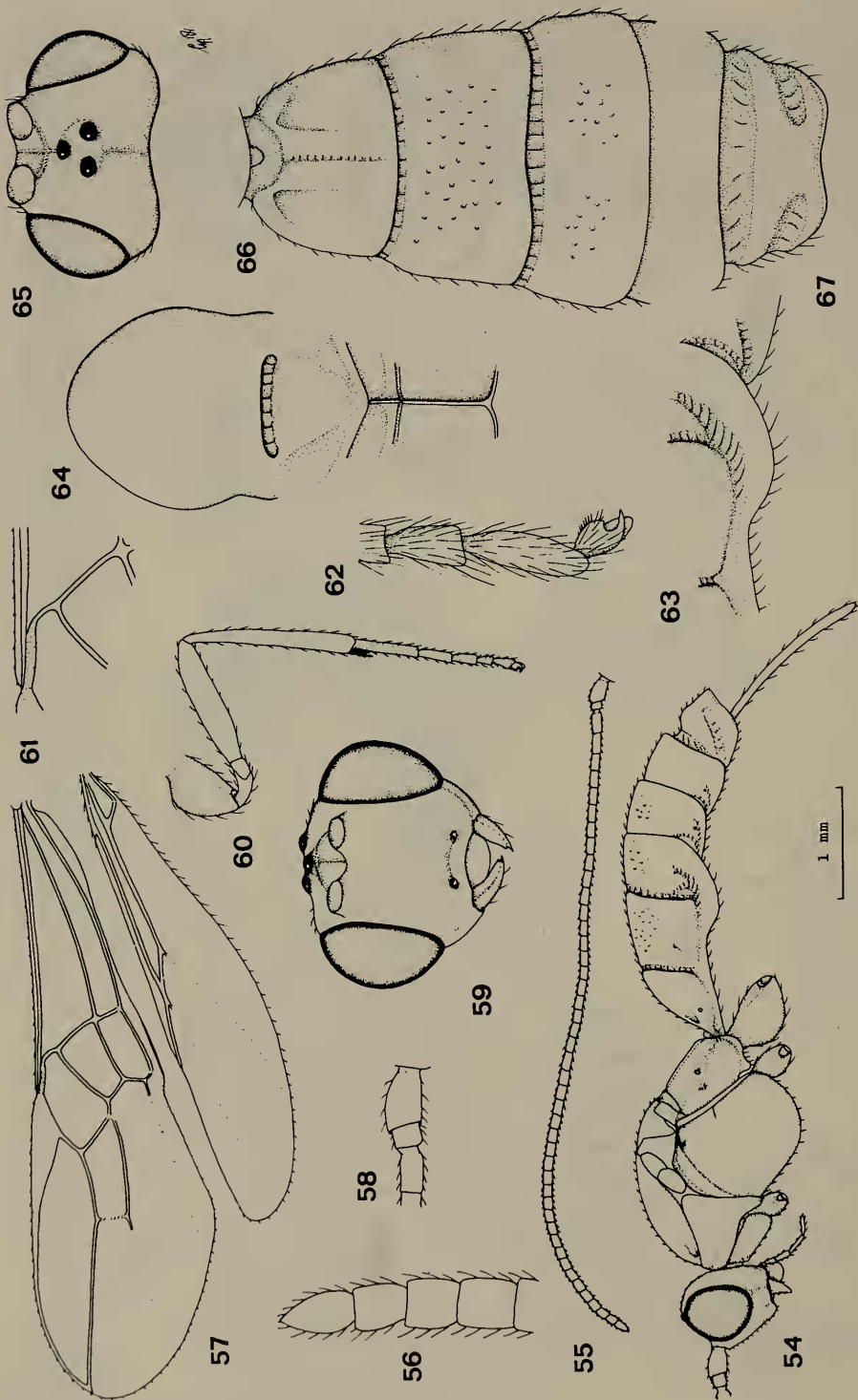
Figs. 13—28. *Dioxybracon bimacronotus* Granger, paratype, ♀. 13, habitus, lateral aspect; 14, wings; 15, scapus and pedicellus, outer lateral aspect; 16, apex of antenna; 17, antenna, lateral aspect; 18, metanotum, lateral aspect; 19, apex of ovipositor; 20, mesosoma, dorsal aspect; 21, subocular groove; 22, inner hind claw; 23, head, dorsal aspect; 24, hind leg; 25, vein 1-SR of fore wing; 26, head, frontal aspect; 27, 1st—3rd metasomal tergites, dorsal aspect; 28, apex of 6th tergite, dorsal aspect. 13, 14, 17, 24: scale-line (= 1 mm); 15, 18, 19, 25: 2 ×; 16, 21, 22: 5 ×; 20, 23, 26—28: 1.1 ×.



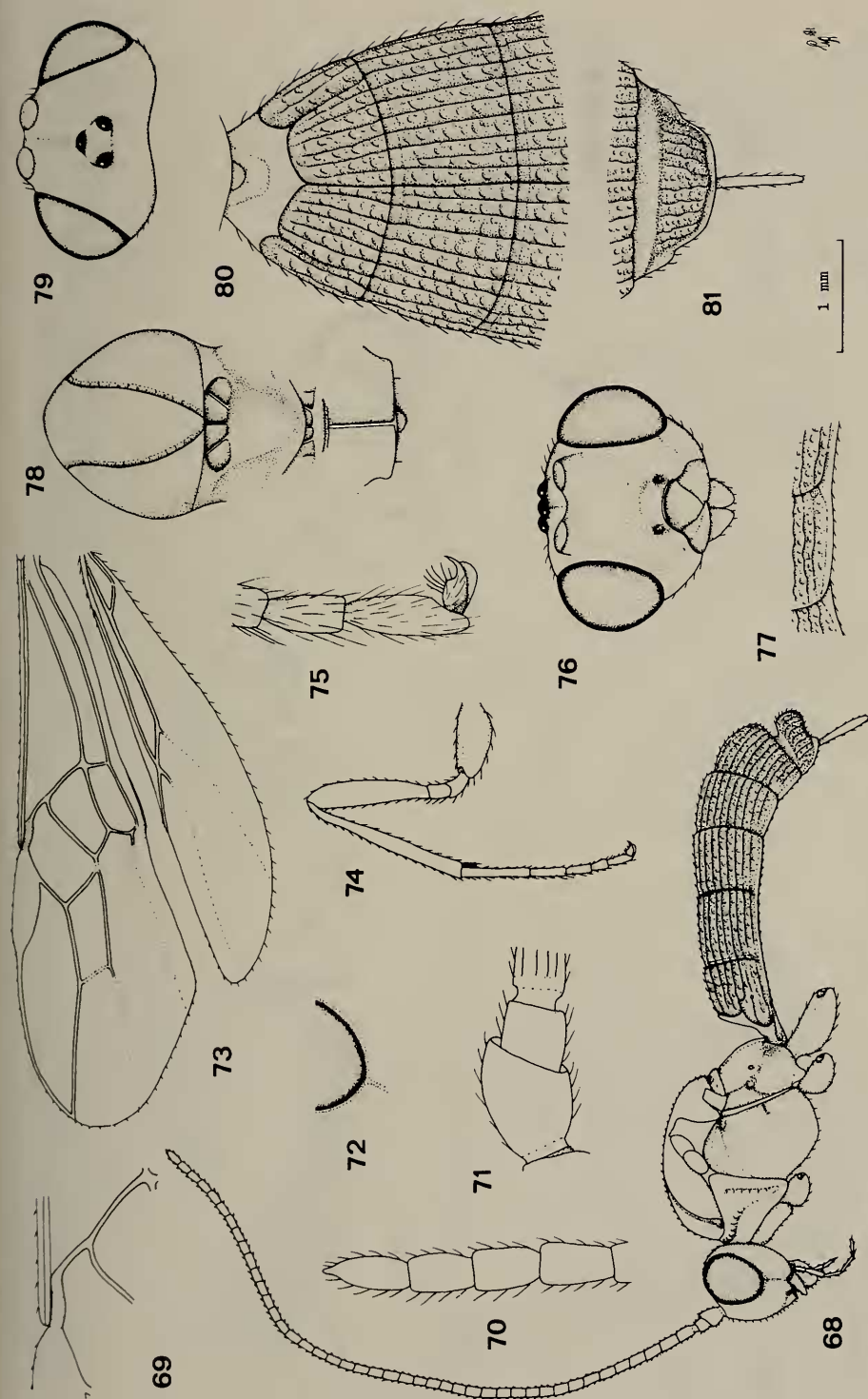
Figs. 29—40. *Pedinopleura emarginata* gen. et sp. nov., holotype, ♀. 29, habitus, lateral aspect; 30, wings; 31, base of antenna, outer aspect; 32, head, dorsal aspect; 33, head, frontal aspect; 34, base of hind wing; 35, mesosoma, dorsal aspect; 36, vein 1-SR of fore wing; 37, hind leg; 38, hind claw; 39, 1st metasomal tergite, dorsal aspect; 40, 6th tergite, dorsal aspect. 29, 30, 38: scale-line (= 1 ×); 31, 34, 36: 2 ×; 32, 33, 35, 39, 40: 1.2 ×; 37: 5 ×.



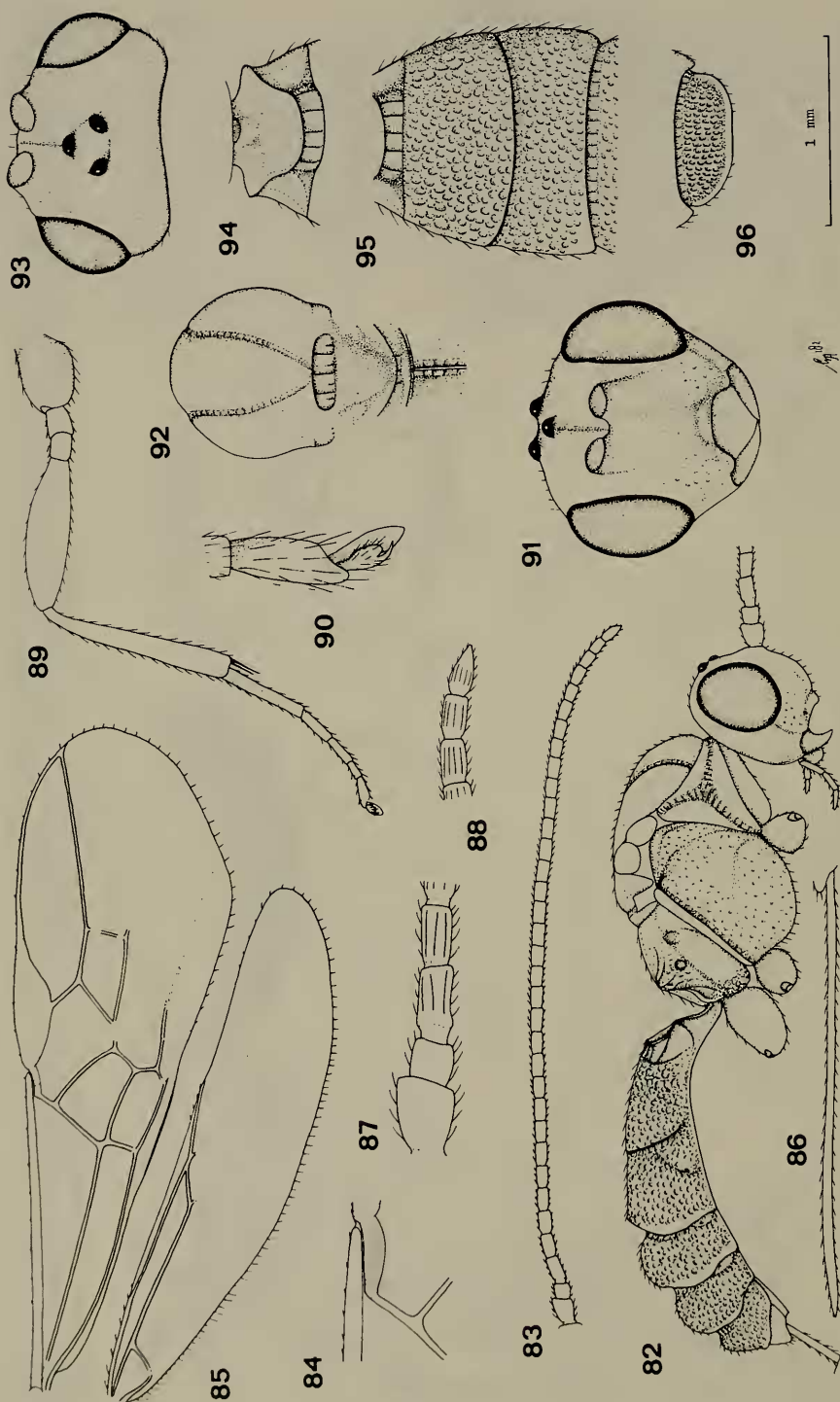
Figs. 41—53. *Pedinopleura koschunensis* (Watanabe), holotype, ♀ (but 49 of paratype, ♂). 41, habitus, lateral aspect; 42, apex of antenna; 43, head, lateral aspect; 44, head, dorsal aspect; 45, scapus and pedicellus, outer aspect; 46, mesosoma, dorsal aspect; 47, apex of 6th tergite of ♀, dorsal aspect; 48, vein 1-SR of fore wing; 49, apex of 6th tergite of ♂, dorsal aspect; 50, hind leg; 51, outer hind claw; 52, head, frontal aspect; 53, 1st metasomal tergite, dorsal aspect. 41, 43, 47, 49, 50, 53: scale-line (= 1 ×); 42, 45, 51: 2.5 ×; 44, 46, 52: 1.2 ×; 48: 1.5 ×.



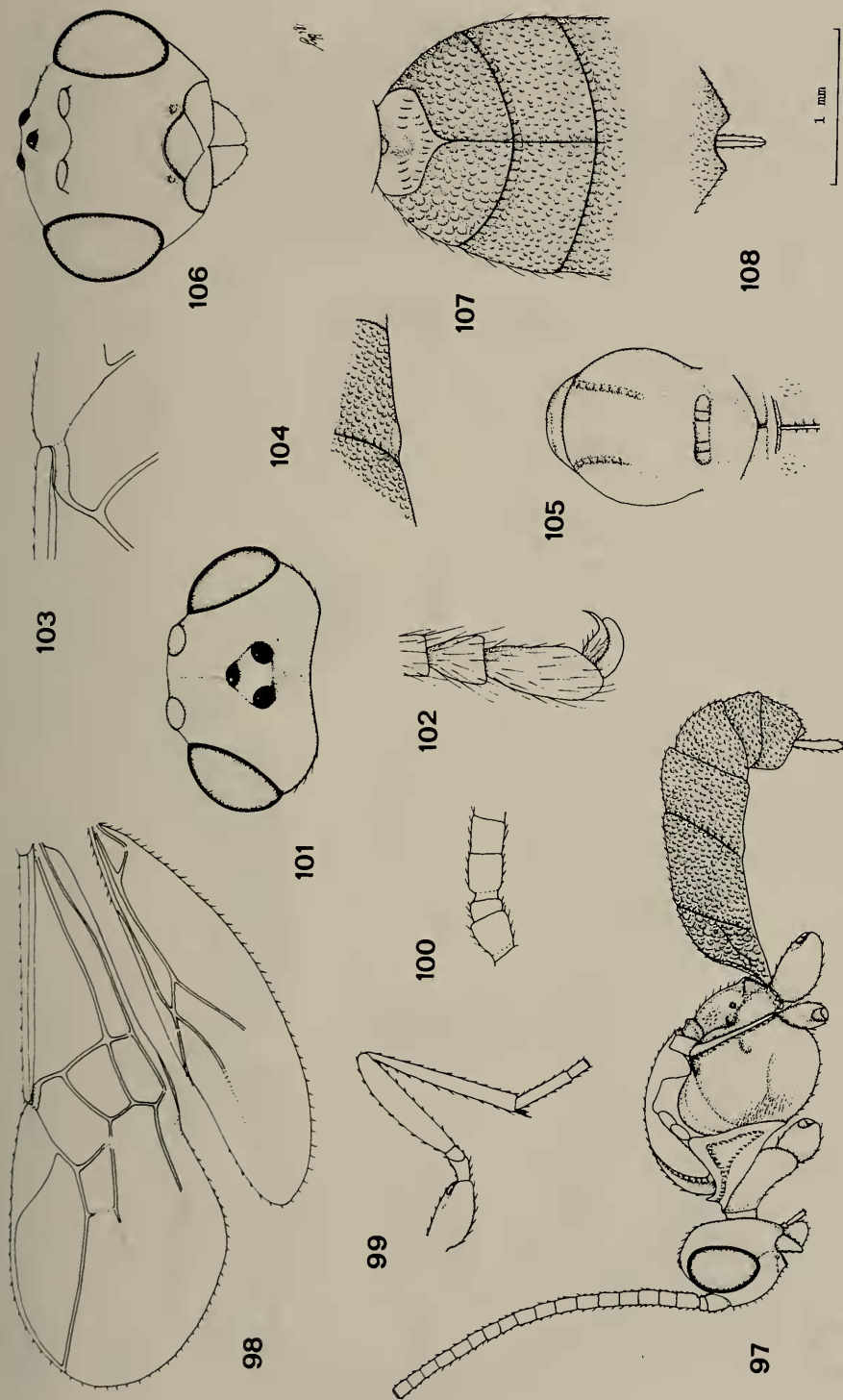
Figs. 54—67. *Apotosoma latimarginale* gen. et sp. nov., holotype, ♀. 54, habitus, lateral aspect; 55, antenna, apex of antenna; 57, wings; 58, base of antenna, outer aspect; 59, head, frontal aspect; 60, hind leg; 61, vein 1-SR of fore wing; 62, outer hind claw; 63, lateral margin of 2nd and 3rd tergites; 64, mesosoma, dorsal aspect; 65, head, dorsal aspect; 66, 1st—3rd metasomal tergites, dorsal aspect; 67, 6th tergite, dorsal aspect; 67, scale-line (= 1 ×); 56, 62: 5 ×; 58, 59, 61, 63—67: 2 ×.



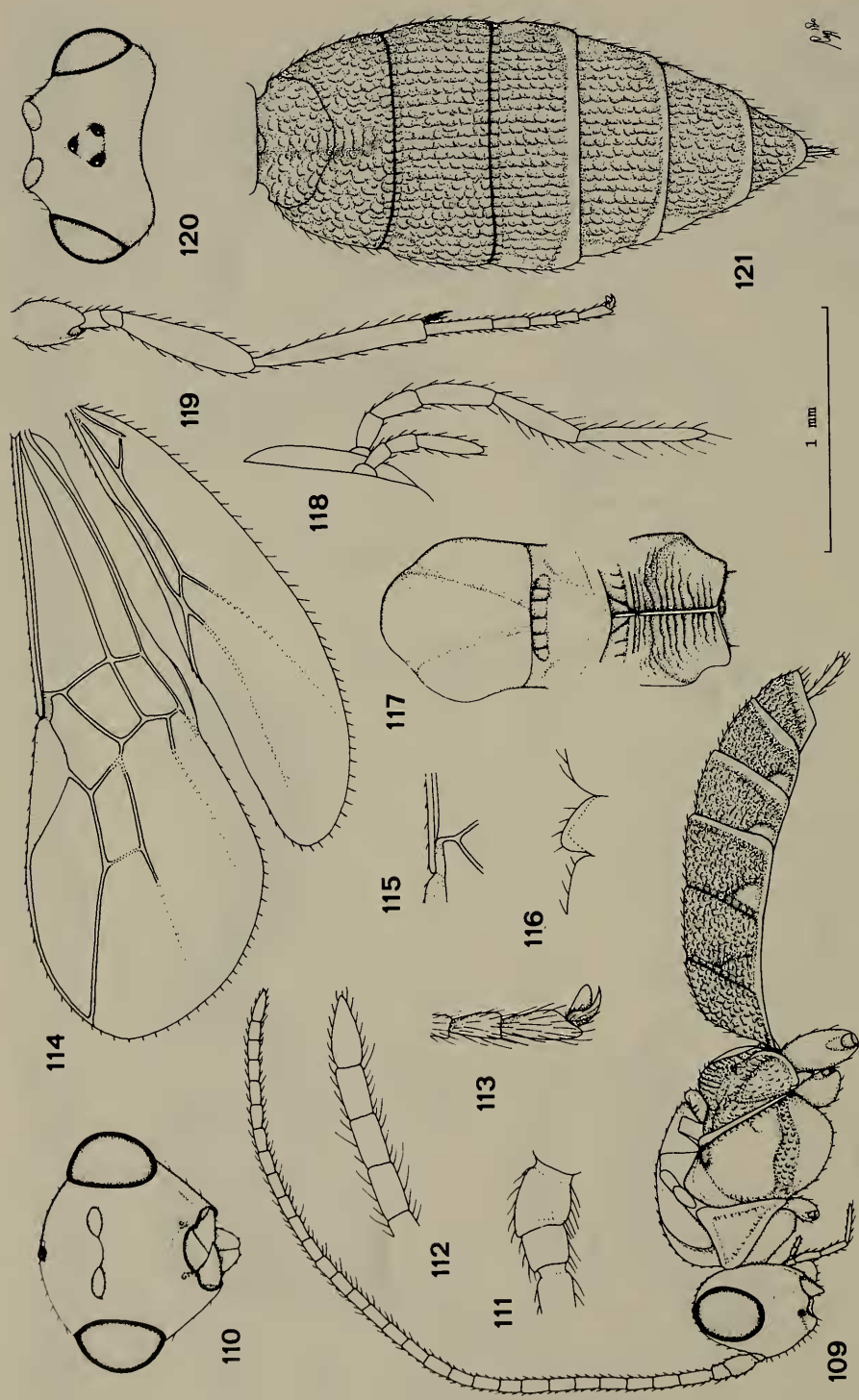
Figs. 68—81. *Hyboteles toxopeusi* gen. et. sp. nov., holotype, ♀. 68, habitus, lateral aspect; 69, wing, lateral aspect; 70, apex of antenna; 71, scapus and pedicellus, outer aspect; 72, subocular groove; 73, wings; 74, outer hind leg; 75, hind leg; 76, head, frontal aspect; 77, lateral margin of 3rd tergite; 78, mesosoma, dorsal aspect; 79, head, dorsal aspect; 80, 1st and 2nd metasomal tergites, dorsal aspect; 81, 6th tergite, dorsal aspect. 68, 73, 74: scale-line (= 1 ×); 69, 72, 76—81: 2 ×; 70, 71, 75: 5 ×.



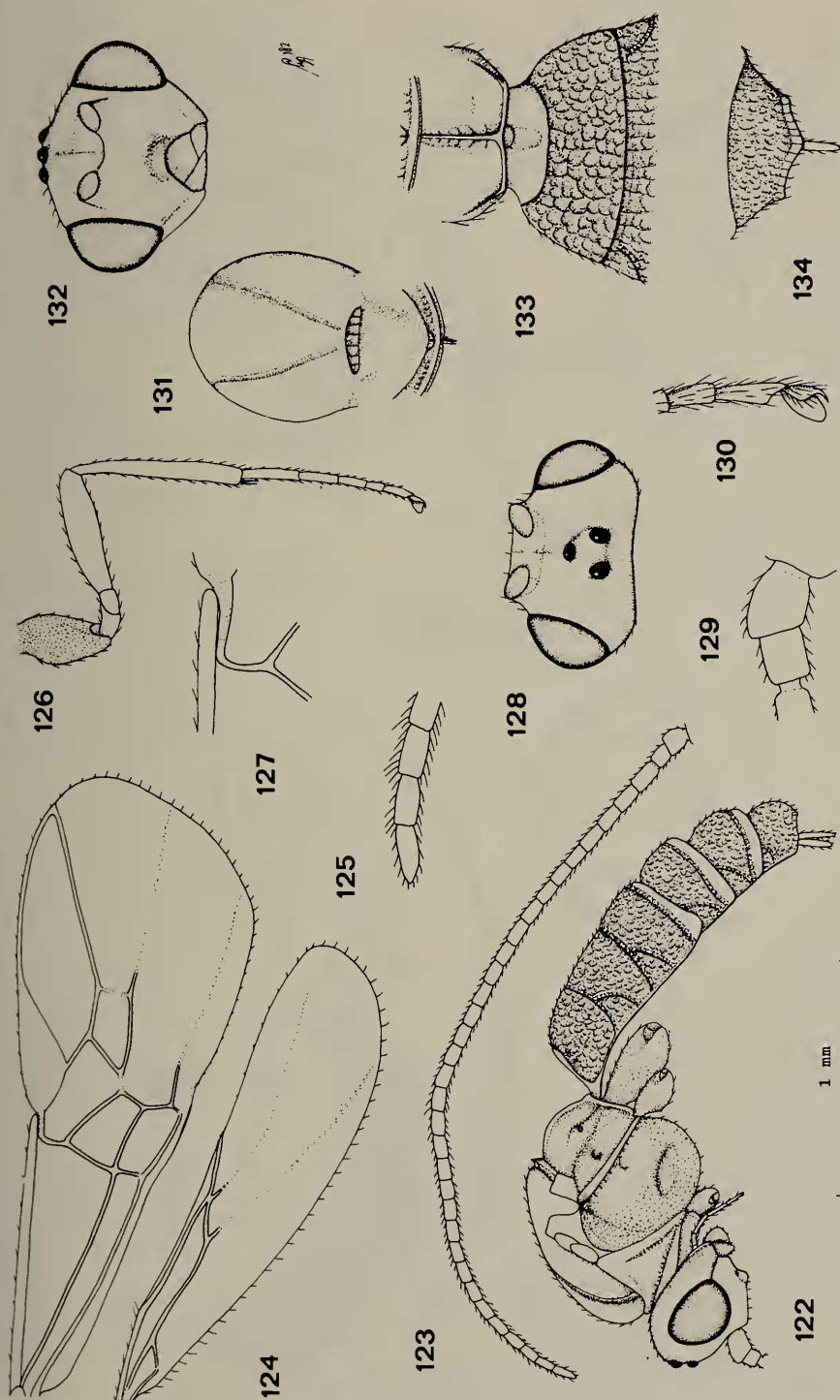
Figs. 82—96. *Eutropobracon indicus* Ramakrishna Ayyar, lectotype, ♀. 82, habitus, lateral aspect; 83, antenna; 84, head, frontal aspect; 85, fore wing; 86, ovipositor; 87, 1st—4th antennal segments, outer aspect; 88, apex of antenna; 89, hind leg; 90, outer hind leg; 91, head, frontal aspect; 92, mesosoma, dorsal aspect; 93, head, dorsal aspect; 94, 1st metasomal tergite, dorsal aspect; 95, 2nd and 3rd tergites, dorsal aspect; 96, 6th tergite, dorsal aspect. 82, 83, 85, 86, 89: scale-line (= 1 ×); 84, 87, 88, 90: 2.5 ×; 91, 93: 1.5 ×; 92, 94—96: 1.1 ×.



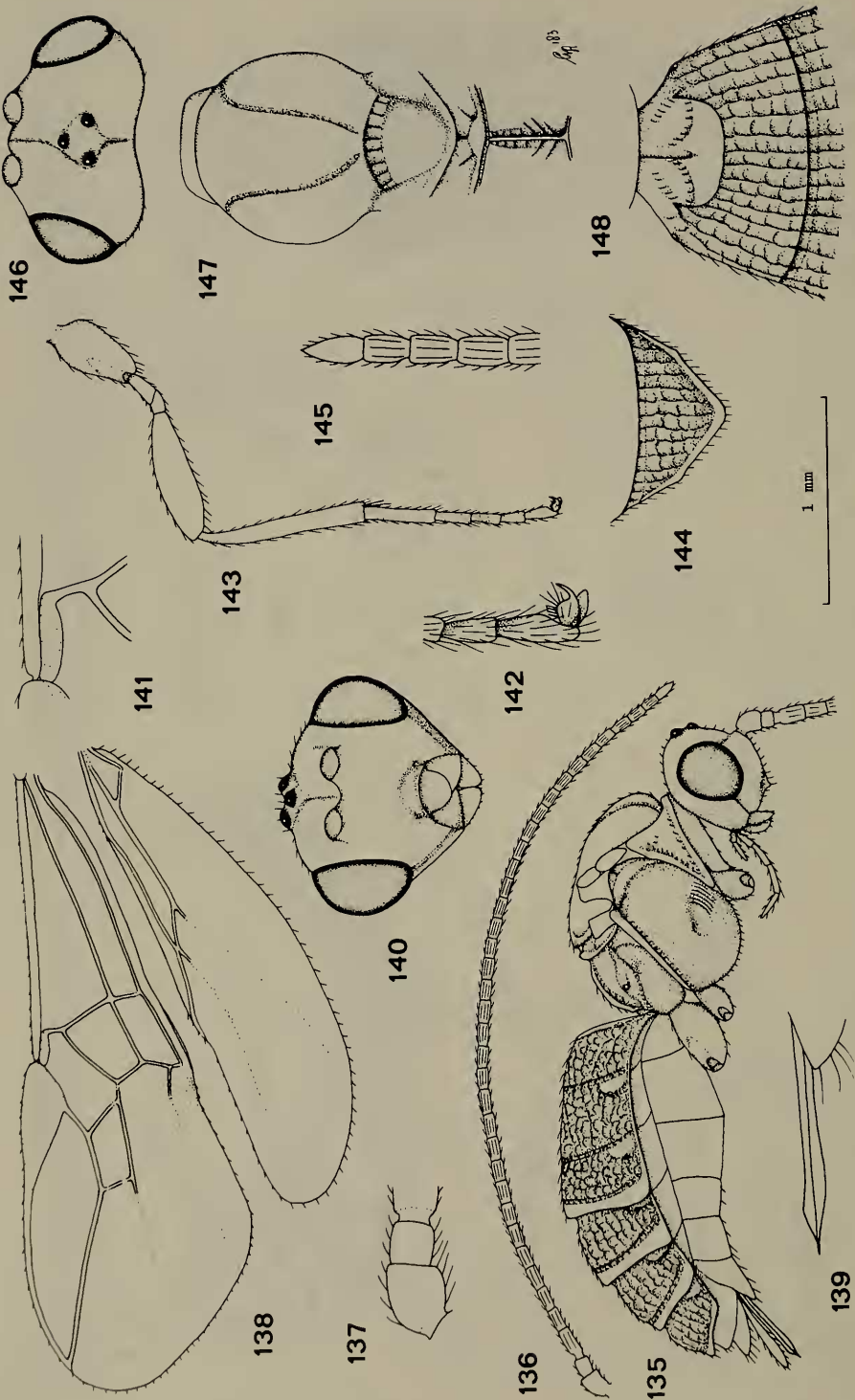
Figs. 97—108. *Philomacroploea basimaculata* Cameron, lectotype, ♀. 97, habitus, lateral aspect; 98, head, dorsal aspect; 99, hind leg; 100, 1st—4th antennal segments; 101, head, frontal aspect; 102, outer middle claw; 103, head, lateral aspect; 104, lateral margin of 3rd tergite; 105, mesosoma, dorsal aspect; 106, head, dorsal aspect; 107, 1st and 2nd tergites, dorsal aspect; 108, 6th tergite, dorsal aspect. 97—99: scale-line (= 1 ×); 100, 101, 103, 104, 106, 107, 108: 1.5 ×; 102: 5 ×.



Figs. 109—121. *Aspidobracon pierreii* gen. et sp. nov., holotype, ♀ (but 118 of paratype, ♂). 109, habitus, lateral aspect; 110, head, frontal aspect; 111, scapus and pedicellus, outer aspect; 112, apex of antenna; 113, outer hind claw; 114, wings; 115, vein 1-SR of fore wing; 116, metanotum, lateral aspect; 117, mesosoma, dorsal aspect; 118, palpi of ♂ paratype; 119, hind leg; 120, head, dorsal aspect; 121, metasoma, dorsal aspect. 109, 114, 119: scale-line (= 1 ×); 110, 115, 117, 120, 121: 1.4 ×; 111—113: 2.5 ×; 116, 118: 3.5 ×.



Figs. 122—134. *Aspidobracon hesperiorius* gen. et sp. nov., holotype, ♀. 122, habitus, lateral aspect; 123, antenna; 124, wings; 125, apex of antenna; 126, hind leg; 127, vein 1-SR of fore wing; 128, head, dorsal aspect; 129, scapus and pedicellus, outer aspect; 130, hind claw; 131, thorax, dorsal aspect; 132, head, dorsal aspect; 133, propodeum and 1st metasomal tergite, dorsal aspect; 134, 6th tergite, dorsal aspect. 122—124, 126: scale-line (= 1×); 125, 129, 130: 2.5×; 127: 2×; 128, 131—134: 1.3×.



Figs. 135—148. *Aspidobracon noyesi* gen. et sp. nov., holotype, ♀. 135, habitus, lateral aspect; 136, antenna; 137, scapus and pedicellus, outer aspect; 138, wings; 139, ovipositor; 140, head, frontal aspect; 141, vein 1-SR of fore wing; 142, hind leg; 143, hind claw; 144, 6th metasomal tergite, dorsal aspect; 145, apex of antenna; 146, head, dorsal aspect; 147, mesosoma, dorsal aspect; 148, 1st tergite, dorsal aspect. 135, 136, 138, 143: scale-line (1 ×); 137, 139, 141, 142, 145: 2.5 ×; 140, 144, 146—148: 1.5 ×.